Review of the Columbia River Basin Fish and Wildlife Program for Fiscal Year 1999 as Directed by the 1996 Amendment to the Northwest Power Act

Report of the

Independent Scientific Review Panel

for the Northwest Power Planning Council

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June 15, 1998
ISRP 98-1

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Review of the Columbia River Basin Fish and Wildlife Program for Fiscal Year 1999 as Directed by the 1996 Amendment to the Northwest Power Act

I - Executive Summary

A. General Review

The Independent Scientific Review Panel (ISRP) evaluated nearly 400 proposals submitted for funding within the Northwest Power Planning Council's (NPPC or Council) Fish and Wildlife Program (FWP). As a result of our evaluation, we placed the individual proposals in one of three categories: adequate, inadequate, or inadequate but adequate purpose. At least 40% of the proposals fell into the two inadequate categories. We present these findings to emphasize to the Council the existence of a major problem. The first step towards a solution to the problem of inadequate proposals is a concerted effort to make all project managers aware of the importance of preparing technically adequate proposals. Several of our recommendations address this step. The second step, if needed, will be to withhold funding from projects represented by technically inadequate proposals. The ISRP is not recommending that step this year.

This report contains several important observations, including:

- The proposals related to artificial propagation were generally inadequate. The ISRP deferred making any recommendations relative to specific hatchery programs until the comprehensive review of artificial propagation is complete.

- A large number of habitat restoration projects were not guided by the findings of a watershed assessment as the ISRP recommended in its 1997 report. The ISRP revisited its 1997 recommendation regarding watershed assessment and strengthened it for this report.

- In its review of Columbia Basin Fish and Wildlife Authority's (CBFWA) Annual Implementation Work Plan, the ISRP identified nine projects assigned to Tier 2 or 3 that should be included in Tier 1 (Table 1).

- Some of the ISRP's recommendations are designed to expedite or improve the peer review process. For example, we recommended a multi-year funding process for specific projects or groups of projects.

- The region has been implementing the FWP for 16 years; yet the ISRP noted that progress towards the program's goals is not reported in the Annual Implementation Work Plan. One of our recommendations urges the Council to correct that oversight.

- We also recommended the Council take specific steps to encourage the submission of innovative proposals.

Table 1. Projects included in Tier 2 or Tier 3 in CBFWA's Annual Implementation Work Plan that the ISRP recommends elevating to Tier 1.

ID	PROJECT TITLE	CBFWA Tier	Amount Requested
MAINSTEM REGION			
9105100	Monitoring and Evaluation Statistical Support	3	332,774
9047	Use Unsteady Flow to Aid Mainstem Passage of Juvenile Salmonids	3	199,700
9079	Inventory Resident Fish Populations in Bonneville, Dalles, John Day Reservoirs	3	240,741
DESCHUTES SUBBASIN			
9153	Preserve Cryogenically the Gametes of Selected Mid-Columbia Salmonid Stocks	2	89,573
ROCK CREEK SUBBASIN			
9159	Rock Creek Watershed Assessment and Restoration Project	2	266,106
UMATILLA SUBBASIN			
9016	Research/Evaluate Restoration of NE Oregon Streams and Develop Management Guidelines	3	287,574
9141	Strategies for Riparian Recovery: Plant Succession and Salmon	3	401,678
WENATHCEE SUBBASIN			
9050	Remove 23 Migrational Barriers and Restore Riparian Vegetation on Chumstick	2	200,000

METHOW SUBBASIN			
9086	Coordinate Assessment and Prioritization of Key Habitats in Methow Basin	2	599,000

The amount of time in the annual cycle allotted to the ISRP review has little flexibility. This year, most of our time was devoted to the evaluation of the individual proposals. Following our review of individual proposals, there was little time left to address programmatic issues. Several important programmatic concerns were not addressed in this report, but they will be addressed in the future.

The ISRP made 26 specific recommendations to the Council. They are listed below. They are also included at the appropriate places in the text and set off into boxes to make their identification easier.

B. Specific Recommendations

1. The Review Process

II-C.1

To help make project peer review a routine part of the implementation of the FWP, the ISRP recommends revision and distribution of the SRG's guidelines on peer review of proposals and projects. The revisions should address problems in proposal quality identified in the 1997 and 1998 ISRP reviews.

V-A.1

The ISRP recommends that the Council communicate to the basin's project managers the importance of the annual proposals in determining its funding priorities. The Council should make it clear that inadequate proposals submitted in 1999 will not be funded.

V-B.2.b.1

The ISRP recommends that all the smolt monitoring activities be incorporated into an umbrella proposal that clearly justifies the various elements and defines their relationship to each other. The entire program should be

subjected to programmatic review and placed on a multi-year funding track.

V-B.2.c.1

The ISRP recommends that the various projects related to the large scale use of coded-wire technology be incorporated into an umbrella proposal, subjected to independent review, and placed on a multi-year funding track.

V-B.2.c.2.

The ISRP recommends that all the white sturgeon studies in the basin including headwaters be coordinated and subjected to independent review and placed on a multi-year funding track.

V-B.2.c.3

The ISRP recommends that the entire PATH program be subjected to independent review, the proposals more effectively coordinated and the entire set of proposals placed on a multi-year funding track.

V-C.2.1

The ISRP recommends that the individual project proposals that comprise parts of a single large supplementation project be incorporated under a single umbrella proposal and considered for a multi-year funding track. This recommendation assumes that the comprehensive review will recommend continuation of supplementation programs in the basin.

V-C.8.1

The ISRP recommends that the Council require requests for staff funding be tied to a specific project proposal(s). The FTEs should be justified, their work described and the costs, and results tied to the objectives of a functional project.

V-D.2.1

The ISRP recommends that the Council adopt a multi-year funding process for selected projects.

2. Programmatic Issues

V-B.2.b.2

The ISRP recommends that the Council place more emphasis on protection and ways to enhance habitat of the naturally reproducing salmon populations in the mainstem of the Columbia River.

V-C.1.1

The ISRP recommends that the Council urge CBFWA to include in its Annual Implementation Work Plan a report of past accomplishments at the watershed and subregional/subbasin levels. The accomplishments should be reported in terms of FWP goals.

V-C.1.2

The ISRP recommends that the Council urge CBFWA to include in its Annual Implementation Work Plan a report that demonstrates it is using the information collected to improve program implementation (adaptive management) at the watershed and subregion/subbasin level. This report should include a description of the specific improvements in the program that resulted from information obtained through the program in previous years.

V-C.1.3

The ISRP recommends that the Council or Council staff communicate to project managers that continuation proposals will not be funded unless there is a technical summarization of past year's results sufficient for peer review.

V-C.3.1

The ISRP recommends that the Council set a deadline of 2 to 3 years after which no habitat projects will be funded unless they are preceded by and consistent with a watershed assessment, and the relationship of the project to that assessment clearly stated. Prior to that deadline, the Council should fund only those proposed projects that address the questions and concerns listed in Section V-C.3 Habitat Restoration.

V-C.4.1

The ISRP recommends that the Council explicitly encourage innovative projects by earmarking a small percentage of its budget each year as seed money.

V-C.5.1

The ISRP recommends that the Wildlife Program include an explicit scientific research component. Innovative monitoring and research proposals could be encouraged through this part of the Program.

V-C.5.2

The ISRP recommends that additional scientific criteria be added to those currently used to prioritize proposals for wildlife mitigation projects.

V-C.5.3

The ISRP recommends that specific mechanisms be developed to coordinate the FWP with other programs that have significant impact on fish and wildlife and their habitat in the Columbia River Basin.

V-C.5.4

The ISRP recommends that the wildlife and fish habitat protection programs be better integrated and that projects be evaluated on criteria that favor those projects with documented benefits to both terrestrial and aquatic species.

V-C.6.1

The ISRP recommends that the Council continue the practice of developing RFPs targeted to specific problems. This should become an annual procedure. We further recommend that requests for proposals to conduct the work or research be widely distributed to individuals, companies, and government agencies.

V-C.7.1

The ISRP recommends that Council systematically evaluate budgets among projects for consistency and reasonableness.

3. Changes in Project Priority

V-B.2.b.3

The ISRP recommends that Project Nos.: 9105100, Monitoring and Evaluation Statistical Support; 9047, Use Unsteady Flow to Aid Mainstem Passage of Juvenile Salmonids; and 9079, Inventory Resident Fish Populations in the Bonneville, The Dalles, and John Day Reservoirs, be funded in FY 99.

V-B.2.e.1.1

The ISRP recommends that Project No. 9153 (Preserve Cryogenically the Gametes of selected Mid-Columbia Salmonid Stocks) be funded in FY 99.

V-B.2.e.4.1

The ISRP recommends that Project Nos. 9016 (Research/Evaluate Restoration of Northeast Oregon Streams and Develop Management Guidelines) and 9141 (Strategies For Riparian Recovery: Plant Succession & Salmon) be funded in FY 99.

V-B.2.e.5.b.1

The ISRP recommends that Project No. 9159 (Rock Creek Watershed Assessment and Restoration Project) be funded in FY 99.

V-B.2.f.1

The ISRP recommends that Project Nos. 9086 (Coordinate Assessment and Prioritization of Key Habitats in Methow Basin) and 9050 (Remove 23 Migrational Barriers and Restore Riparian Vegetation on Chumstick Creek) be funded in FY 99.

II - Introduction

A. The 1996 Amendment to the Northwest Power Act

The 1996 amendment to the Power Act was the latest in a series of recent changes in the way the region selects and funds projects under the Columbia River Basin Fish and Wildlife Program (FWP). Prior to 1995, the Bonneville Power Administration (BPA) chose which measures in the FWP to implement and then selected the specific projects and contractors. In 1995, BPA and the Northwest Power Planning Council (hereafter Council or NPPC) adopted a procedure that formally included the basin's fish and wildlife managers and the Council in the process leading to project selection and funding. This new approach called on the fish and wildlife managers to prioritize all proposed projects and present them to the Council in the form of an Annual Implementation Work Plan. The Council could then either ratify or revise the managers' priorities before submitting them to BPA for funding. Also in 1995, the Clinton Administration agreed to set a six-year, fixed budget for BPA's fish and wildlife costs. This meant that proposed projects had to be prioritized within a fixed budget.

The 1996 amendment to the Northwest Power Act added another change to the project selection process. The amendment directed the Council to form an Independent Scientific Review Panel (ISRP) to make recommendations to the Council on project priorities within the FWP and to review the projects proposed for funding for their scientific merit and consistency with the program. The ISRP must report its findings before the Council adopts its annual funding recommendations.

Incorporating the independent peer review and the changes made in 1995 into a smoothly functioning project selection process will take more than a year or two. Continuous adjustments and improvements will be made over several years in a cooperative, iterative, and educational effort involving the Council, the ISRP, the fish and wildlife managers, BPA and interested non-governmental entities. This report describes the results of the second year of independent peer review.

B. ISRP Charge

The 1996 amendment to the Northwest Power Act mandates an annual, independent peer review of projects proposed for funding within the FWP. The amendment covers a four-year period beginning in 1997. The ISRP is required to report the results of its review each year by June 15th,

and before the Council adopts its funding recommendations. The Council is obligated to explain in writing if its recommendations disagree with those contained in the ISRP's report.

The ISRP's report for 1997, was organized by major chapters in the FWP, i.e., juvenile salmon migration, coordinated salmon production and habitat, resident fish, and wildlife. The 1997 Annual Implementation Work Plan submitted by the Columbia Basin Fish and Wildlife Authority (CBFWA) was organized geographically by subbasins or regions. In our 1997 report, we noted this mismatch between the two organizational structures and the problems it created, particularly in our review of the CBFWA priorities. In this report, the ISRP has adopted the geographical organization in an effort to facilitate the assessment and review of CBFWA's project priorities and funding recommendations. To facilitate the Council's review of the ISRP's report, all specific recommendations are listed in the Executive Summary and they are highlighted (boxed) in the text of the report.

C. Rationale and Philosophy for Peer Review

Peer review is an established tradition in research and development programs in the United States and much of the world. It is a process by which knowledgeable colleagues evaluate project proposals, project status or draft publications for their scientific and technical quality. "Quality" is generally assessed against a common set of criteria appropriate for the type of work under review. The purpose of peer review is to ensure that the proposed work is consistent with current knowledge, has clear objectives, and employs recognized methods that are not naive, impractical, or unrealistic. Reviews of ongoing work seek evidence of progress toward objectives. Funding institutions or publishing organizations often select reviewers who are independent of the projects and in many cases they remain anonymous to the project staff. Other peer reviews are by formal independent advisory groups (such as the Independent Scientific Advisory Board (ISAB) and ISRP) or ad hoc review teams that may meet with those being reviewed. The General Accounting Office and the Office of Science and Technology Policy have stressed the need to include peer review in the operating policies of federal funding agencies (General Accounting Office 1994).

Shortly after the Council developed the FWP, BPA recognized the need for systematic peer review of potential and existing projects. It commissioned a study of the proposal and project evaluation practices of a number of major scientific and applied fisheries agencies and requested recommendations for their use in its Implementation Planning Process

(Coutant and Cada 1985). No formal peer review process was implemented, but in 1989 the Scientific Review Group (SRG) was formed as an independent scientific advisory body for BPA's Implementation Planning Process.

Shortly after the formation of the SRG, the Policy Review Group asked the SRG to peer review five supplementation proposals. The SRG concluded the proposals were technically inadequate and suggested that for future reviews, research proposals should be improved and address the points usually specified in guidelines for preparation of proposals issued by many federal agencies. In response to a Policy Review Group request for such guidelines, the SRG provided a summary of proposal guidelines and formats used in various agencies (SRG 1990).

Following publication of the General Accounting Office's 1994 critique of federal agency peer review policies, the SRG encouraged the use of peer review in the FWP. The SRG believed that peer review of BPA-funded projects was vitally important to attaining and maintaining a high level of technical quality in the FWP and would more likely lead to salmon restoration. However, prior to formation of the ISRP in 1996 routine peer review of proposals and existing projects had never been part of the FWP (except for specific reviews requested from the SRG).

Implementation of peer review might be an unwelcome disruption of the status quo causing some confusion among both project managers and reviewers. To avoid confusion, the SRG developed two draft booklets that clearly explained project and proposal peer reviews (SRG 1994a and 1994b).

A major stimulus to formalization of peer review in the FWP was the 1996 amendment to the Northwest Power Act that directed the Council to establish the ISRP. As the ISRP concludes the second year of peer review under the amendment, the rationale and significance of peer review are becoming better recognized throughout the basin. Unfortunately, many proposals still do not attain minimum standards to allow review of their scientific soundness.

II-C.1

To help make project peer review a routine part of the implementation of the FWP, the ISRP recommends revision and distribution of the SRG's guidelines on peer review of proposals and projects. The revisions should address problems in proposal quality identified in the 1997 and 1998 ISRP reviews.

The Problem of Inadequate Proposals. The research proposal is the single piece of information evaluated by reviewers and so represents the sole opportunity for proposers to present a convincing case for funding. The peer review described above is based on the research proposal. The proposal summarizes the goals, objectives, methods and rationale of the proposed work. It is the means by which the research idea or a management need is presented to the larger scientific and management community.

From the reviewers' perspective, the proposal contains all the relevant information about a project. It is the basis for determining the merits of individual projects within the context of the entire FWP. Because the proposal alone carries the burden of representing the work to be done, it must contain a clear presentation of the idea, a strong argument for the need, a logical sequence of discussion, consistency between activities and objectives. Clear logic and command of subject matter are important. If the idea has merit and the presentation is high quality, the proposal makes a persuasive argument for funding.

The ISRP is charged with making recommendations to the Council on the scientific and technical merit of proposals and on the allocation of funds within the FWP. The basis for these recommendations is the peer review of proposals. The proposal review, therefore, is not simply a bureaucratic exercise but it is the fundamental core of evaluation and recommendation and ultimately it influences the quality of program implementation. The question is whether the proposed work merits a share of FWP funds. For the ISRP to answer that question, it must be able to understand and evaluate individual projects.

A proposal should contain a full description of proposed actions. This includes an identification of the problem, a summary of the state of knowledge about the problem, a statement of goals and objectives, a set of hypotheses to be tested (where appropriate), a list of tasks by which objectives will be met, methods and schedule for carrying out the tasks, a statement of research need, a justification of the requested budget, and references to related scientific work.

Proposal information can be produced in different ways. One can fill out sections of a form in answer to specific questions, as was done for FWP proposals in 1997 and 1998. Alternatively, one can write a narrative that contains all the proposal elements listed above, but is not constrained to answers to questions on a proposal form.

Both methods for proposal generation have advantages and disadvantages. The proposal form provides information in standardized format that lends itself to electronic management. However, a form also creates the impression that any answer provided in each section of the form meets the project manager's obligation. The ISRP has observed evidence of this problem in the 1997 and 1998 reviews.

In contrast, a narrative proposal changes the incentive of the writer from one of providing the minimum information in a form to one of providing the information necessary to make an integrated and convincing case for funding. However, a proposal written without a form can be more difficult to manage in an electronic database. It may also require more time to review, as proposal content and format may vary more than under the standard form approach.

The ISRP recognizes the administrative benefits to BPA of the electronic proposal form. However, we also note many problems with proposals that stem directly from the fact that people are filling out a form rather than writing a full narrative proposal. It is clear that many proposers do not regard the proposal as the single piece of information that will make their case for funding, nor do they see the proposal as an integrated presentation of an argument for funding. Specific problems with many of the 1998 proposals that are encouraged by the use of the proposal form include:

1. Incomplete information.

2. Disjointed presentation of information.

3. Incomplete documentation and references.

4. Incomplete descriptions of the problem.

5. Inadequate rationale for the need for research.

6. Failure to connect proposed research with other related work.

7. Failure to think systematically about the project as a whole: Has the information presented made a convincing case that the project should be funded?

8. Inadequate attention to a systematic approach to the research or management problem.

9. Artificial division of projects into pieces represented on separate forms.

10. Inadequate budget justification relating requested funds to proposed activities.

11. References to, rather than summaries of, information contained in other sources.

These shortcomings in proposals suggest three serious problems in the FWP. First, project managers seem not to have thought systematically about the problems they propose to research or manage and how those problems fit into the FWP as a whole. Second, many project managers seem not to understand the basic function of the proposal as a communication and persuasion tool and instead view the proposal as a bureaucratic requirement. Third, many project managers seem not to see the proposal submission process as critical to their funding success and so have not prepared adequate proposals to justify their work.

Over the next few months, the ISRP will work with BPA in an attempt to reach a compromise for the next review and funding cycle on the proposal form that serves BPA's purposes and addresses the problems described above.

III - Summary of Recommendations made in the 1997 Report and Council's Response

Section 4(h)(11)(D)(v) of the 1996 Amendment to the Northwest Power Act calls on the ISRP to make recommendations to the Council concerning projects proposed for funding as part of the FWP. Subsection (vi) then requires the Council to "fully consider" the recommendations of the ISRP when the Council makes its project funding recommendations to BPA, and "if the Council does not incorporate a recommendation of the ISRP, the Council shall explain in writing its reasons for not accepting ISRP recommendations."

A. The 1997 ISRP Report

The ISRP's first report covered the projects submitted in 1997. We reviewed a sample group of 100 project proposals and found them to be generally cursory and inadequate for scientific review. We recommended that the project managers focus more on the description of project design, methods, and monitoring and evaluation so that the projects' relative scientific merit and effectiveness can be judged. Most of the 1997 ISRP report covered broad programmatic issues.

B. General Programmatic Recommendations

Integrated Framework. In our general recommendations, we strongly urged the Council to adopt an integrated framework for fish and wildlife management in the Columbia River Basin. A framework is key to the development of a scientifically-based process to evaluate and prioritize projects annually. The present structure of the Council's program, which does not contain an explicit framework provides little guidance for prioritization of efforts. It also contains many specific measures that can and apparently often do conflict biologically. At present, Council and National Marine Fisheries Service are working together in consultation with the ISAB to develop a multi-species framework based on the Council's proposed integrated framework. That effort is expected to guide the forthcoming amendment process of the Council's FWP, as well as the recovery plan for Snake Basin salmon populations.

Program Implementation. We made numerous recommendations related to the implementation of the Council's program. We noted a lack of clear correspondence between the priorities, goals, and measures in the Council's program and the implementation of projects. Many of the planning and review steps for major projects outlined in the program were either skipped over or given passing attention during implementation. We noted that the region's efforts are hampered by the presence of multiple recovery programs. We recommended that research, monitoring and management activities in the Council's program be integrated with the recovery plans developed under the Endangered Species Act (ESA) and the tribal restoration plan. We also recommended integration of BPA funded efforts, the major focus of the Council's program, with those funded by the U. S. Army Corps of Engineers and other federal agencies. We recommended the funding of work in areas identified by the Council program, but not yet implemented, including studies of mainstem habitat, ocean and estuary dynamics, and salmonid biodiversity and population structure. Council has recently solicited proposals for research projects on mainstem habitat and population structure. Finally, we recommended a thorough evaluation of the effectiveness of high-cost management actions in the mainstem, such as the predator control program.

Habitat and Watershed Projects. In parts of the program dealing with tributary habitats, the ISRP recommended that reliable watershed assessments be developed before implementation of habitat restoration projects. Few of the habitat restoration projects appeared to be guided by watershed assessments nor did they recognize the importance of a watershed perspective. Council responded by initiating a watershed project review process that established a set of principles to guide the preparation and review of anadromous fish, resident fish, and wildlife projects. The ISRP assisted this effort by working with CBFWA to establish criteria for review of watershed-based projects. These criteria then guided the selection of the watershed restoration projects submitted in 1997.

Artificial Production. A significant portion of the Council's program, in conjunction with the Lower Snake Compensation Program, involves various artificial production programs and facilities. Our report criticized the lack of work on a comprehensive regional assessment of the use of artificial production in the basin as called for in the FWP. We urged the Council to initiate such a regional review. Pending that review, we recommended that the Council permit funding of new artificial production projects only after independent peer review confirms that the projects have taken into account the program measures addressing genetic interactions, stock assessment and monitoring. We noted that, in many cases, these reviews are called for in the Council's Program, but apparently have not been implemented. In response to these recommendations, Council, at the

urging of Congress, initiated a comprehensive review of artificial production. It is underway and is expected to be completed by spring of 1999. In the meantime, Council established a three-step process to review artificial propagation projects.

Mainstem Actions. The ISRP noted that a large number of projects as well as a significant part of the total FWP budget is allocated to mainstem-related projects. We recommended thorough peer-review and evaluation of the effectiveness of high-cost actions, such as predator control and biological studies of gas supersaturation. We recommended that increased attention be paid to coordination and integration among related projects, such as smolt monitoring, or migration and passage-related research. We also recommended quantitative assessment of some of the assumptions, such as flow-survival relationships upon which structural and operational measures are based.

In response, the Council deferred funding several parts of the high cost mainstem program until more focused discussions of their effectiveness and objectives could be completed. The Council ultimately recommended that BPA funding for law enforcement be concluded. The Council reviewed the predator control program and ongoing predation research and recommended scaling back the scope of the predator control program and focus on the most effective control measures. The Council also endorsed a second year of research on avian predation. The Council is continuing to evaluate the gas supersaturation monitoring program to ensure that it collects information needed to improve management decisions.

Resident Fish. The ISRP was critical of the lack of baseline inventory information on native resident fish stocks in the Columbia Basin. We recommended that the Council require a basinwide inventory of remaining native resident fish populations and their status. The inventory would be used to identify opportunities to restore and rebuild native resident fish populations and to set priorities. The Council agreed with the ISRP's recommendation; however, a basinwide review of resident fish populations has yet to be initiated. The ISRP also recommended that resident fish artificial production programs be included in the comprehensive review of artificial production described above. Council agreed with this recommendation. Finally, the ISRP expressed concern over resident fish substitution projects that utilized non-native species or stocks, noting the long legacy of harmful effects that such introductions have had on native fish populations in the western United States and elsewhere throughout North America. In response, Council agreed that all resident fish projects that proposed using non-native species or stocks

would be subjected to independent peer review and an analysis of the risk to native fish populations that would arise from implementation of the proposed project.

IV - Approach to the 1998 Review

The ISRP was appointed by the Council in December 1996. It was composed of eight members from the existing ISAB augmented by three additional members with expertise in wildlife, oceans, and natural resource economics. One of the members resigned prior to the start of the 1998 review of projects. The position remained vacant through the review process. The ISRP review and the recommendations contained here are the product of a consensus process. All the members agree with the formal recommendations contained in the report.

In Section II-C of the report prepared in 1997, we described a generalized work plan for the ISRP review conducted this year. That work plan states that the 1998 review would evaluate projects from both the topical (hatcheries, habitat, mainstem passage, resident fish, and wildlife) and geographical (subbasins) perspectives. In addition, we anticipated the extensive use of a Peer Review Group. The Peer Review Group consists of scientists from within and outside the Columbia Basin appointed by the Council for the purpose of assisting the ISRP with the reviews of individual project proposals.

Both of these plans had to be modified. Before asking 25 or 30 individuals to commit a significant amount of time and effort serving in the Peer Review Group, we concluded it was important to test the criteria and procedures ourselves to identify problems and correct them. To help us in this review, we did obtain the assistance of two individuals, Dr. Robert Gresswell and Dr. Ray White from the list of scientists previously approved by the Council. We will use what we learned this year to develop a plan for the full use of the Peer Review Group in 1999.

We received more proposals than expected, causing us to limit the scope of the review. In February of this year we received 403 proposals from BPA, which was double the number we received last year. In our planning for the 1998 review, we did not anticipate a doubling in the number of proposals. Although, the ISRP read and evaluated each proposal for technical quality, our review addressed only the geographical groupings—subregions or subbasins. There was not enough time, given the number of proposals, to review them from the topical perspective.

The review of individual project proposals consisted of five steps:

1. The Columbia Basin was divided into subregions (Table 2).

Table 2. Geographical division of the Columbia Basin into subregions and subbasins.

Subregion	Subbasin
ALL	System-wide Ocean/Estuary Mainstem
LOWER COLUMBIA	Sandy Willamette Lewis Hood White Salmon Wind Lower Columbia Cowlitz
COLUMBIA R. PLATEAU	Deschutes Fifteenmile Creek John Day Klickitat Umatilla Walla Walla Yakima Rock Creek Crab Creek Snake Tucannon
LOWER SNAKE	Grande Ronde/Imnaha Salmon Clearwater Lower Snake
UPPER SNAKE	Snake River above Hells Canyon Owyhee Malheur
MID-COLUMBIA	Methow/Entiat/Wenatchee Okanogan
UPPER COLUMBIA	Above Chief Joseph Dam Pend Oreille Coeur d'Alene
COLUMBIAN R. HEADWATERS	Kootenai Flathead

2. Individual ISRP members or the two Peer Review Group members were assigned to review all the proposals associated with specific geographical units (subregions and larger subbasins). The assignments were made so each proposal was read and evaluated by at least three reviewers.

3. The evaluations were based on criteria developed in consultation with the ISAB. The criteria were included in the project review form BPA sent out with its instructions for the preparation and submission of proposals. The criteria reflected both the standards outlined in the 1996 amendment and conventional standards for peer review. They included consistency with the FWP, technical justification of the project, specific measurable objectives, adequate design and defensible techniques, adequate monitoring and evaluation, and coordination with similar projects. Using these criteria, each reviewer assigned a numerical score to each proposal.

4. The ISRP held eleven, day-long meetings to discuss the individual proposals. We scheduled the meetings so a minimum of four or five members participated. In addition to the ISRP members assigned to read and evaluate the proposals for a given subregion, other members attending the meetings were encouraged to review the proposals and participate in the discussions.

5. Discussion of the individual proposals was carried out in two steps. Each of the reviewer's scores for the proposals in a subregion were compared and projects with large differences in their scores were flagged. Those projects were discussed first and the reasons for the deviation in the scores explored. Then all the proposals for the subregion or subbasin were discussed. We recorded major positive and negative comments on each proposal during those discussions (Appendix A) and assigned each to one of three categories: 1) adequate, 2) inadequate proposal or 3) inadequate proposal but a good idea. The first two categories were a judgment on the technical quality of the proposal and did not necessarily reflect the need for or the priority of the work proposed. In some cases, proposals were placed in the inadequate proposal category because their need could not be determined from the technical justification given. The third category included proposals that were technically inadequate, but it was clear to the ISRP the project addressed important needs in the basin.

6. Once the evaluation of all individual proposals was complete, we received a group of revised watershed proposals. CBFWA had sent these proposals back to the project managers and asked them to revise and improve their technical quality. We had already read and evaluated the original version of those proposals. Following receipt of the revised proposals, we re-reviewed only those that we had earlier assigned to the inadequate category.

The ISRP did not consider CBFWA's approach to the watershed proposals a good idea. The schedule for completing the annual review has no extra time for reviewing a large number of proposals twice. The time spent this year in our review of some proposals could have been put to more productive use developing the ISRP's programmatic recommendations. Finally, it does not seem fair that some project managers were allowed to revise and resubmit their proposals, while others were denied that opportunity.

The information gained from the individual project reviews was used for four types of recommendations or conclusions:

1. We used the reviews to determine the adequacy of individual proposals.

2. Information gained during the reviews was the basis for programmatic recommendations.

3. Project reviews played a major role in our analysis of CBFWA's priorities.

4. We will revise the evaluation criteria and recommend changes in the review process based on what we learned during the individual project reviews.

The results of the ISRP review for 1998 are presented in four subsections:

1. **Individual Project Reviews.** We developed a broad overview of this year's mix of proposals including funding priorities across the subbasins and a discussion of the general quality of the proposals.

2. **CBFWA Priorities Compared to ISRP Evaluations.** The comparison is organized by subregion or major subbasins. For each, we have prepared a brief narrative followed by an analysis of CBFWA's project by project recommendations.

3. **Programmatic Recommendations.** We identified several general programmatic issues during our review of the individual proposals. Those issues generally apply across the basin or are applicable to all or most of the projects. The programmatic recommendations along with a brief explanation are presented in this section.

4. **Comments on the Review Process.** This is a progress report on the implementation of the peer review process in 1998. We describe additional steps that need to be taken to fully implement the 1996 amendment to the Northwest Power Act.

V - Results

A. Individual Project Reviews

In 1997, the technical quality of the proposals was generally inadequate and we deemed it impossible to carry out a meaningful evaluation of the individual project proposals. In 1998, the technical quality of the proposals improved. Nevertheless, proposals for both new and ongoing projects were generally below what the ISRP considered adequate technical quality. The ISRP assigned 40% of the proposals to the two "inadequate" categories (Figure 1). This statistic presents an unrealistically optimistic view of the overall quality of the proposals. During our initial reading of the proposals, we recognized that their technical quality was still generally poor, but we decided to proceed with the individual evaluations. The ISRP recognized that this was only the second year of the new peer review. Apparently some project managers were not informed of or misunderstood the importance of their annual proposal. In addition, several institutions submitted proposals this

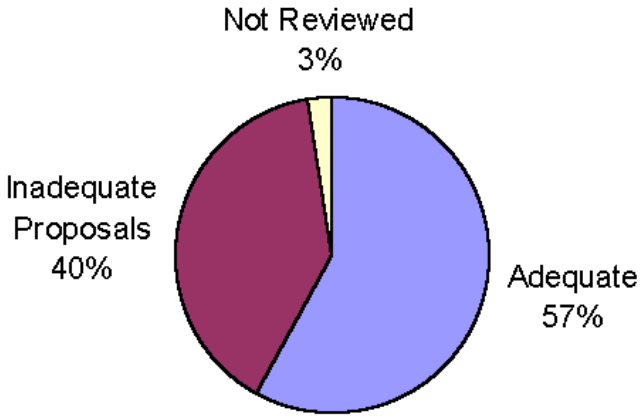

Figure 1. Percentage of the 403 proposals assigned to adequate, inadequate or not evaluated categories.

year having not previously participated in the program; they might not have been aware of the existence or importance of the peer review process. Because of these factors, we tended to be lenient in our reviews. Had we strictly adhered to the standards contained in the evaluation criteria, a much higher percentage of the proposals would have been placed in the inadequate category.

The ISRP recognizes that there may be a reason why some individuals turned in incomplete or otherwise technically inadequate proposals. For example, for the supplementation programs, the project sponsors have already prepared other documents extensively describing the goals, objectives, operational procedures, and monitoring. Some of this information is in the master plans or other separate documents. Given the past documentation some programs have undergone, we can understand why some project managers did not see the need to adequately summarize the important technical background and failed to do an adequate job of describing the technical rationale for their projects. Nevertheless, this information must be presented for meaningful scientific project review to be possible.

The Council needs to reaffirm that funding will be contingent on the preparation of an adequate proposal. The ISRP has been given the assignment of conducting a peer review of the documents upon which funding for individual projects is to be determined. The document selected for that review is the annual proposal. Many project managers in the basin seem to have misunderstood the importance of the annual proposal, i.e., that it actually does determine their funding. Alternatively, there may be a large shortage of technically qualified individuals preparing proposals. We believe the problem is largely the former. If funding is not contingent on an adequate proposal, then the ISRP is wasting time reviewing documents that do not matter. If funding is contingent on an adequate annual proposal, then more effort needs to be expended convincing those preparing the proposals of the importance of their submissions.

V-A.1

The ISRP recommends that the Council communicate to the basin's project managers the importance of the annual proposals in determining its funding priorities. The Council should make it clear that inadequate proposals submitted in 1999 will not be funded.

The term inadequate describes the quality of the proposal only. It does not imply that the project is not needed. In many cases the proposal

did not provide enough information to allow the ISRP to determine if the project was meeting a legitimate need or if the methods to be used were sound and appropriate.

By placing a proposal in the inadequate category, the ISRP is not making a recommendation to withhold funding, at least not this year. However, we are calling the Council's attention to a major problem. Do the inadequate proposals reflect a misunderstanding by otherwise competent project managers, or do the proposals actually reflect the quality of implementation of the FWP? Given the continuing decline in salmon and steelhead in the basin, the Council should be concerned about the answer to those questions. Recognizing that this is only the second year of a formal peer review, it's likely that misunderstanding is a major source of the problem. This year the ISRP is listing the inadequate proposals to highlight the problem. We are recommending the Council make a concerted effort to ensure the project managers understand the importance of preparing an adequate proposal. This education effort will have to have two phases: 1) communication to project managers before the 1999 proposals are due; and 2) reinforce the importance of the annual proposal by not funding those proposals that are inadequate in 1999.

It is our understanding that CBFWA will hold a series of workshops on proposal preparation for project managers. The ISRP is willing to work with CBFWA to identify and discuss the problems we found in the proposals submitted in 1998.

The individual project reviews and a comparison with CBFWA's priorities are discussed in the next section. However, an overview of the recommended funding pattern across all subbasins yields insight into CBFWA's overall priorities. The emphasis in CBFWA's proposed programs cluster around three areas: mainstem and systemwide, the Yakima River, and the Lower Snake, especially the Clearwater, Grande Ronde and Salmon Rivers (Figure 2). The listing of Snake River chinook and sockeye salmon can explain the emphasis in that region. To a lesser degree, ESA considerations could explain the emphasis on the mainstem. The Council's program includes two sections (7.4K and 7.11) devoted to the Yakima basin, which partially explains the emphasis given to that subbasin. While the geographical distribution of effort appears to be justified from the administrative perspective, we could not determine if it is justified from the scientific, biological, or programmatic perspective. The time constraint in this year's review did not permit us to make that determination. We will focus on that question in next year's review.

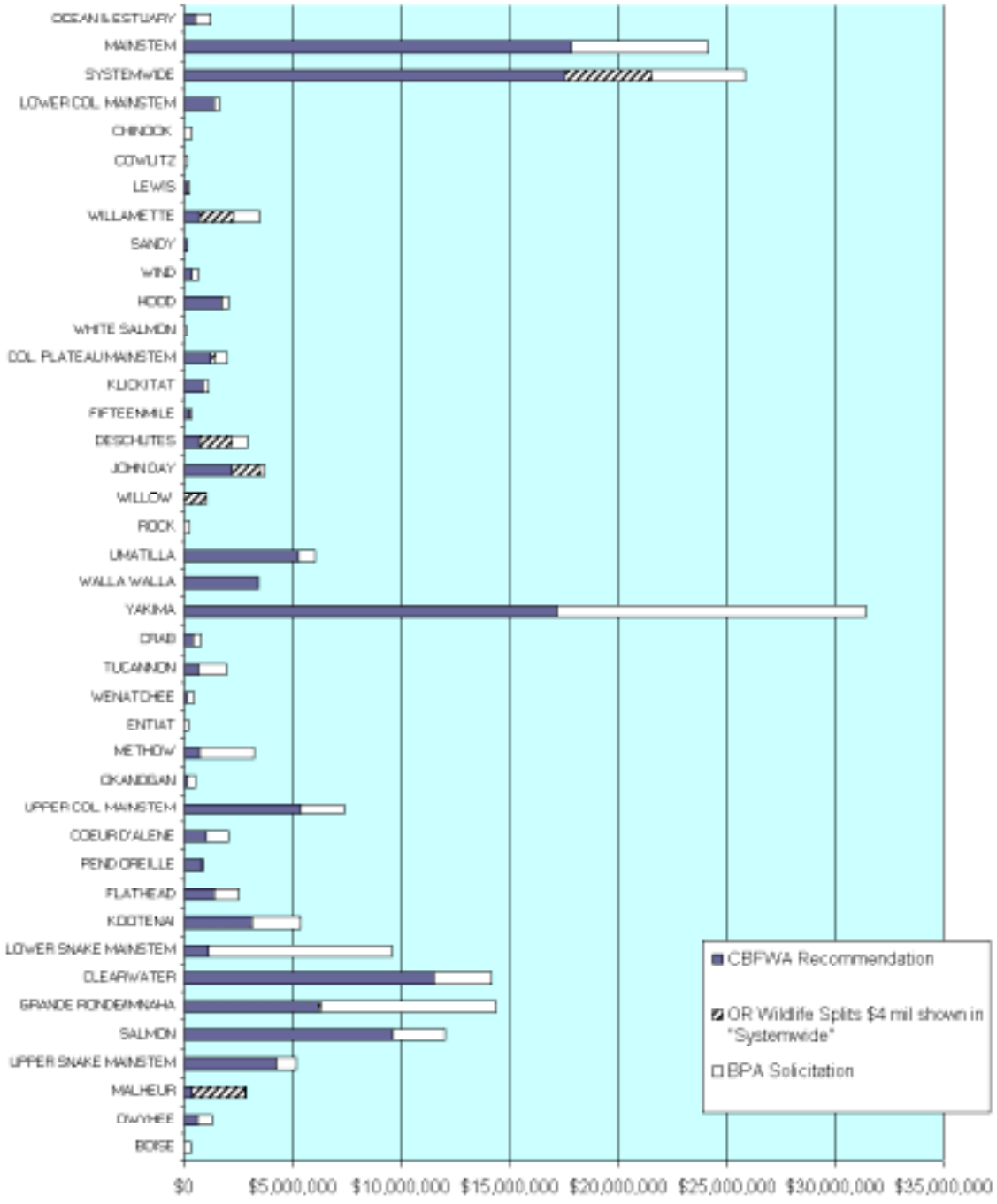

Figure 2. Total funding levels by subbasin for all the proposals submitted in the BPA solicitation and those recommended by CBFWA (Tier 1).

B. CBFWA Priorities Compared to ISRP Evaluations

1. General Comments

The CBFWA segregated projects into three tiers to indicate priority: Tier 1 projects were recommended for funding in FY 99, Tier 2 projects were recommended for funding only if additional dollars were made available, and Tier 3 projects were not recommended for funding. For each project, we compared our ranking (adequate, inadequate or inadequate proposal but a good idea) to the CBFWA rankings (tiers). We then listed our conclusion as one of seven possible outcomes: Concur, recommend, moderate support, inadequate proposal, terminate, defer, or not reviewed. These outcomes are defined as:

Concur. For projects in the category, there was agreement between the ISRP and CBFWA ranking.

Recommend. Projects in this category fell into either Tier 2 or 3 in the CBFWA ranking, but the ISRP recommends that the council fund the project in FY 99. Funding for these projects might be obtained by reassigning funds from among these proposed projects listed as inadequate.

Moderate Support. Projects in this category fell into CBFWA's Tier 3, but the ISRP found the proposal adequate. We are not officially recommending that projects in this category be funded in FY 99.

Inadequate Proposal. Projects in this category fell into either Tier 1 or 2 in the CBFWA ranking, but the ISRP found the proposal inadequate. *This does not mean that the purpose of the project was not important or that the ISRP is making an official recommendation not to fund.* We are simply noting for the record that the proposal was technically not adequate, thus the project must be considered not scientifically supportable at this time.

Terminate. Projects in this category fell into CBFWA's Tier 1 or 2, but the ISRP recommends that the Council not fund the project in FY 99.

Defer. The use of this outcome was restricted to the hatchery programs. Our conclusions regarding the funding of specific hatchery programs are deferred until after the comprehensive review of

artificial propagation has been completed. (For additional discussion of the hatchery programs see page 90)

Not Reviewed. Some projects were not reviewed because to do so would have constituted a general conflict of interest for the ISRP. For example, we did not review the proposals covering the ISRP and ISAB's budgets and we did not review a proposal submitted by a former member of the ISRP. In addition, we did not review law enforcement proposals because of an earlier decision made by the Council.

The ISRP concurred with the CBFWA priority in 53% of the proposals (Figure 3). We placed 19% of the proposals in the inadequate category and 17% were deferred. We recommended the Council fund 11 projects in FY 99 that CBFWA had placed in Tier 2 or 3. We recommended one project be terminated; that project was also recommended for termination by CBFWA after FY 99.

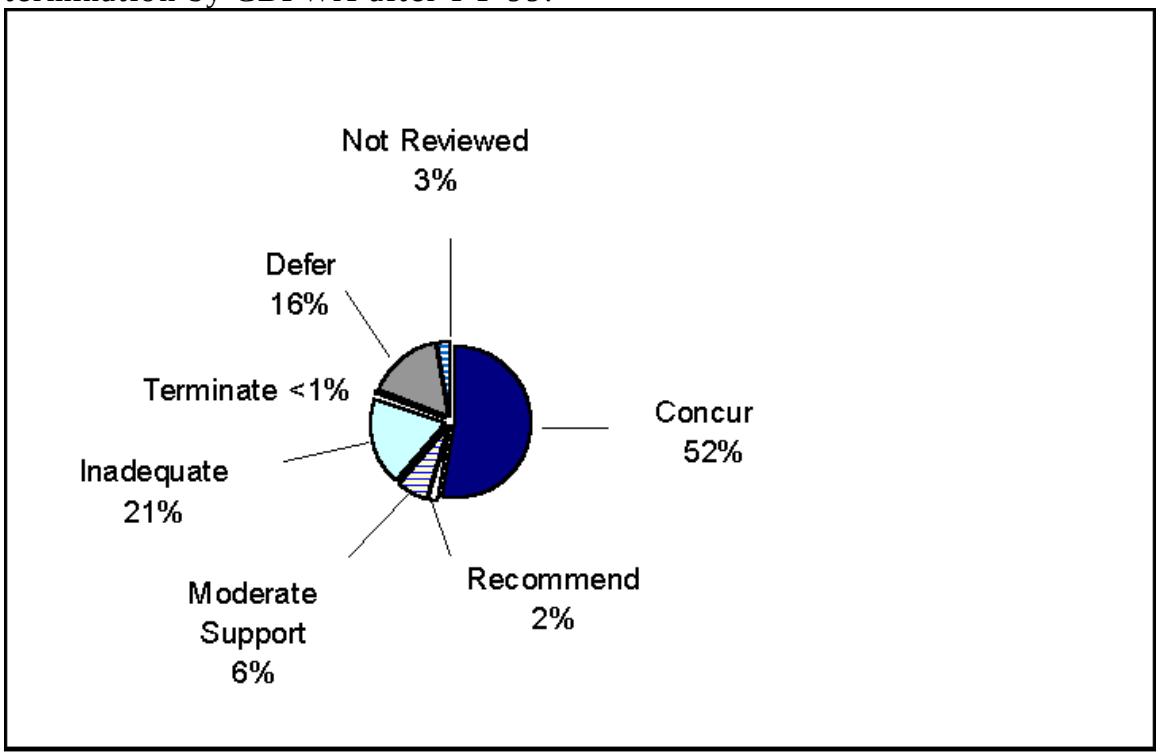

Figure 3. Percentage of the proposals received for 1999 Fish and Wildlife funding, assigned to the ISRP's seven categories of comparisons with CBFWA recommendations. These outcomes refer to the ISRP's treatment of proposals (Deferred or Not Reviewed) or their comparison with CBFWA. See text for definition of the seven categories.

The proposals not reviewed included those for which the ISRP as a whole had a conflict of interest, i.e., our funding proposal and a proposal submitted by a former member of the ISRP. Because of an earlier Council decision we did not review the law enforcement proposals.

The ISRP discussed each proposal and prepared a summary of the important positive and negative comments. Those summaries are presented in Appendix A.

Most of the subregional and subbasin descriptions came from CBFWA (1998a and 1998b).

2. Regional Summaries

a. Ocean and Estuary

On September 12, 1996, the first and only amendment to the Northwest Power Act of 1980 was enacted by Congress. This amendment directed the Council to "...consider the impact of ocean conditions on fish and wildlife populations" in making its recommendations to BPA regarding projects to be funded. Because of that emphasis, we summarize and present here the recent literature on the relationship between ocean conditions and salmon production and its relevance to the FWP.

Factors Limiting Salmon Production. Salmon production is impacted by environmental conditions at each stage of a salmon's life cycle. Unfavorable conditions in freshwater, estuarine, and/or ocean environments can all act as limiting factors to salmon production. For years, the freshwater phase of the salmon cycle has been better understood than the marine phases and it was commonly assumed that limitations in freshwater, both natural and man-made, ultimately restricted the production of salmon. However, a growing body of evidence shows that Pacific salmon also experience large year-to-year fluctuations in marine survival and production (Pearcy 1992; Coronado-Hernandez 1995). Pearcy further makes a very strong case that the critical phase in marine production occurs early in the marine life of juvenile salmonids. More than ever before, production of salmonids is now seen as an integrated process involving potential limitations at all life phases. But clearly, variation in marine conditions can have a major impact on the final production realized from a brood year, and these impacts must be accounted for in any salmon management process.

What causes conditions in the marine environment to change and affect long- and short-term variation in salmonid production. A number of

recent studies indicate that fluctuations in climate are the ultimate source of widespread, regionally-coherent changes in marine survival rates. Mysak (1986) showed that Bristol Bay and Fraser River sockeye salmon populations were impacted by El Niño events. Francis and Sibley (1991) noted an apparent climate-related inverse decadal-scale relationship between the abundances of Alaska pink and West Coast coho salmon. Beamish and Bouillon (1993) and Hare (1996) examined trends in North Pacific salmon production and linked these to variations in the intensity of the Aleutian Low atmospheric pressure cell and North Pacific marine environment. Hare and Francis (1995) and Francis and Hare (1994) used time series analysis to connect dramatic changes in Alaska sockeye and pink salmon production to decadal-scale climate shifts in the North Pacific. Mantua et al. (1997) labeled the aforementioned climate phenomenon as the "Pacific Decadal Oscillation" or PDO. They described the PDO as a pan-Pacific, recurring pattern of ocean-atmosphere variability (also see Minobe 1997 and Zhang et al. 1997). Of interest to this work, Mantua et al. (1997) found evidence of an inverse relationship between landings of major stocks of Alaska Pacific salmon and those of U. S. West Coast coho and Columbia River spring chinook salmon.

This work has been further refined by Hare et al. (1998). They developed a conceptual model which attempts to explain how Alaska and West Coast Pacific salmon populations are both responding to ocean climate conditions at the PDO interdecadal time scale and, generally, in opposite directions. For the past 20 years, conditions have favored Alaska salmon and have been unfavorable for West Coast salmon. They speculate that a significant shift in zooplankton biomass as well as its distribution around the subarctic gyre has provided favorable feeding conditions for migrant Alaska-origin smolts during a highly critical stage in their life history. Conversely, the dramatic decrease in zooplankton production off the West Coast due to stratification of California Current waters and decreased primary production has created a relatively barren ocean environment for West Coast smolts. As adults, many West Coast Pacific salmon migrate to and spend considerable time in the Subarctic Gyre, which they co-inhabit with adult Alaska-origin Pacific salmon. However, because it is during the early ocean near shore phase of their life history that many hypothesize the oceanic influence occurs, one would expect these two regional metapopulations to show inverse trends in production. Much of this is also summarized in Harrison (1998) and Francis et al. (1998).

It is noteworthy that Hare et al (1998) also emphasizes that large-scale variation in marine conditions should not detract from restoration efforts in freshwater and estuarine habitats. Freshwater, estuarine, or marine phases of salmon production may compensate for each other or any

one phase may limit adult production. However, if conditions in freshwater are poor, then the effect of the marine life phases may be asymmetric with limited capability or likelihood that the marine phases can substantially improve production or population trends, but substantially greater risk that negative effects will be compounded. Consequently and given that we can not control changes in the ocean climate, management of salmonid production requires that we protect and/or restore freshwater habitats and population diversity, consider production over the full life cycle, and integrate changes in the marine phases into our management processes.

Special Council FWP Measures Addressing the Issue. Several papers from the Council (NPPC 1997; Bisbal and McConnaha 1998) have proposed a conceptual perspective for managing salmon in the Columbia River Basin in the face of ocean variability. The proposal follows an ecosystem approach that blends environmental fluctuations and management at the freshwater and oceanic ends of the salmon life cycle. Reiterating many of the points made by Hare et al. (1998), Bisbal and McConnaha (1998) argue strongly against the default notion that salmon management activities are futile in the face of variable ocean conditions.

Their approach rests on implementation of two fundamental strategies to influence salmon survival. The first one is improvement of estuarine and nearshore plume conditions. The Columbia River estuary and nearshore plume are important to salmon production, particularly because of their impact on survival of juvenile fish making the transition to the ocean environment. These areas are affected by upriver flow regulation, river operations, and ecological imbalances resulting from the large number of hatchery smolts. In addition, the Columbia River plume has been severely altered by upstream flow regulation and construction of dams. Based on these points, consideration of ocean conditions could include evaluation of the impacts of flow regulation and river operations on the estuary and nearshore environment.

The second strategy addresses the general issue of environmental variability—whether freshwater or marine—through preservation of salmonid life history diversity. As has been pointed out above, fluctuations in the ocean climate (at a number of different time scales) are an integral component of the overall environmental variability encountered by salmon. Salmon and steelhead in the Columbia River and elsewhere accommodate ocean mortality and environmental variability through the development of a wide range of biological traits and behaviors. However, management actions often restrict the natural expression of this life history diversity. Diversity can be reduced by actions that target limited time periods (e.g. seasonal flow augmentation, spill, transportation and hatchery release schedules), select for particular physical characteristics of the fish (e.g.

harvest and hatcheries), or reduce complexity of habitats (e.g. reduction of seasonal flows and channelization). As a result, a major option for taking ocean conditions into account involves ensuring that restoration strategies are designed and evaluated with regard to their potential to restrict or enhance the natural expression of biological diversity in salmon populations.

This year only four proposals attempted to address ocean and estuary conditions. Of those, the ISRP found one technically adequate. CBFWA placed two proposals in Tier 1. The ISRP concurred with one and found the other inadequate. The ISRP concurred with CBFWA's two Tier 3 projects (Table 3).

Table 3. Comparative listing of the ISRP project evaluation, CBFWA priority, and the ISRP conclusions for the projects in the Ocean and Estuary Subregion.

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
OCEAN & ESTUARY				
9035	Evaluate Estuarine & Nearshore-ocean Migratory Behavior of Juvenile Salmon	Inadequate	3	Concur
9063	Ocean Survival of Salmonids Relative to Migrational Timing, Fish Health…	Adequate	1	Concur
9157	Effects of Ocean Conditions on the Growth and Survival of Salmonids	Inadequate	3	Concur
9702600	Identify Marine Fish Predators of Salmon and Estimate Predation Rates	Inadequate	1	Inadequate Proposal

b. Mainstem

This subregion includes all the mainstem areas of the Columbia and Snake Rivers within the range of anadromous fishes and influenced by hydroelectric projects. Mainstem projects concentrate on resolving problems in the mainstem Columbia or Snake River largely associated with dams and manipulation of seasonal flow patterns. Management focuses on salmon (spring, summer and fall chinook, coho, chum, sockeye), winter and summer steelhead, Pacific lamprey, and white sturgeon. Many fisheries-related activities in the mainstem are funded by the U. S. Army Corps of Engineers. These projects were not included in this review.

There is great variation in the quality of proposals submitted for implementation in the mainstem of the Columbia or Snake Rivers.

Unfortunately, some proposals addressing important problems were not adequate and were difficult to evaluate.

Several different proposals related to monitoring of smolt survival, travel time and passage through the mainstem. They should be combined and subjected to a comprehensive programmatic review that gives special consideration to the complex interactions between the projects. At a minimum, these projects should be incorporated into a larger umbrella proposal that integrates the various components into a comprehensive program. On the surface, the work certainly appears to be justified, but the combined projects are expensive and there may be opportunities for cost savings. Of particular concern is the inadequate justification in the proposals for multiple databases such as maintained by StreamNet (The Northwest Aquatic Information Network) and PTAGIS (Columbia Basin Pit-Tag Information System). Perhaps a review of the entire smolt monitoring program should be split into three components: 1) data collection, 2) data storage and retrieval, and 3) data analysis.

V-B.2.b.1

The ISRP recommends that all the smolt monitoring activities be incorporated into an umbrella proposal that clearly justifies the various elements and defines their relationship to each other. The entire program should be subjected to programmatic review and placed on a multi-year funding track.

Our review of the mainstem proposals revealed a general lack of concern with protection and enhancement of successful spawning populations of salmonids, including populations using mainstem spawning and rearing habitat. There were only two proposals for work on the Hanford Reach (both were recommended for funding by CBFWA and judged adequate by ISRP) as contrasted with numerous proposals for work on weak populations. There is relatively less emphasis on projects in the John Day River than in other tributary rivers with weaker populations. We believe that one of the best means to insure long term existence of salmonids in the Columbia River Basin is protection and enhancement of the few remaining successful populations. There is need for further work on these populations. For example, there is a need to evaluate potential conflicts between harvest of Hanford Reach adults and the potential of this core population to generate valuable colonizers. A related issue is evaluation of the benefits to salmon of additional spawning and rearing habitat which will be made available in the event that operations are

modified or dams are removed at John Day, the Lower Snake River, or other places. Most popular news articles currently focus on the potential value of such actions to endangered upriver stocks; however, the greatest benefit may be expanded spawning and rearing habitat for stocks lower in the river. Scientific information on this issue may be critical in supporting whatever decisions are made regarding modification of dams or their operations. Council staff should evaluate the need for additional work and research in these areas and suggest targeted work/research for support in the future.

V-B.2.b.2

The ISRP recommends that the Council place more emphasis on protection and ways to enhance habitat of the naturally reproducing salmon populations in the mainstem of the Columbia River.

CBFWA placed 26 mainstem projects in Tier 1. ISRP concurred with 23 of those and found 7 inadequate. CBFWA placed two projects in Tier 2; the ISRP found both inadequate. Of the 13 projects CBFWA placed in Tier 3, the ISRP concurred with three, gave moderate support to seven and recommended that three of the projects be funded in 1999 (Table 4). The first of these, Project No. 9105100, Monitoring and Evaluation Statistical Support, provides independent assessment of several components of the FWP by analyzing historical tagging data and providing real-time analysis to monitor outmigration timing and water budgets. The project has an excellent record of achievements. The ISRP did not see more competitive proposals among the Tier 1 projects.

The second proposal in this category was Project No. 9047, Use Unsteady Flow to Aid Mainstem Passage of Juvenile Salmonids. Optimal unsteady, turbulent flow hydraulics typical of rivers may be more biologically appropriate for aiding migration success than management for flow volume or velocity alone. This project has potential to yield economical reservoir management options, relative to drawdown or dam removal, to achieve conditions favorable to fish migration.

The third project, No. 9079, Inventory Resident Fish Populations in the Bonneville, The Dalles, and John Day Reservoirs, proposes to conduct a systematic inventory of resident fishes. Data from this study would provide a basis for determining the effects of mitigative actions, whether specifically designed to aid anadromous or resident fishes, on the native resident fish assemblages of this reach of the lower Columbia River.

V-B.2.b.3

The ISRP recommends that Project Nos.: 9105100, Monitoring and Evaluation Statistical Support; 9047, Use Unsteady Flow to Aid Mainstem Passage of Juvenile Salmonids; and 9079, Inventory Resident Fish Populations in the Bonneville, The Dalles, and John Day Reservoirs, be funded in FY 99.

Table 4. Comparative listing of the ISRP project evaluation, CBFWA priority, and the ISRP conclusions for the projects in the Mainstem Subregion.

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
MAINSTEM SUBREGION				
Smolt Monitoring Proposals				
8331900	New Fish-Tagging System	Adequate	1	Concur
8332300	Monitor Smolts at the Head of Lower Granite Reservoir and Lower Granite Dam	Adequate	1	Concur
8401400	Smolt Monitoring at Federal Dams	Inadequate, Adequate Purpose	1	Inadequate Proposal
8712700	Smolt Monitoring By Non-Federal Agencies	Inadequate, Adequate Purpose	1	Inadequate Proposal
8712702	Comparative Survival Rate Study (CSS) of Hatchery Pit Tagged Chinook	Adequate	1	Concur
8740100	Assess Smolt Condition for Travel Time Analysis: Physiology Health Survival	Adequate	1	Concur
9008000	Columbia Basin Pit-Tag Information System	Adequate	1	Concur
9102800	Monitoring Smolt Migration of Wild Snake River Spring/Summer Chinook	Adequate	1	Concur
9102900	Life History and Survival of Fall Chinook Salmon in Columbia River Basin	Adequate	1	Concur
9105100	Monitoring and Evaluation Statistical Support	Adequate	3	Recommend
9204101	Evaluate Adult Migration in Lwr Col. River and Tributaries	Inadequate, Adequate Purpose	1	Inadequate Proposal
9403300	The Fish Passage Center	Adequate	1	Concur
9701000	PIT Tag System Transition	Adequate	1	Concur
9808001	PIT Tag Purchase and Distribution	Adequate	1	Concur
8810804	StreamNet: The Northwest Aquatic	Adequate	1	Concur

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
	Information Network			
Gas Bubble Trauma Proposals				
9080	Incidence and Effects of Gas Bubble Trauma on Salmonid & Resident Fish	Adequate	3	Moderate Support
9115	Develop TDG Abatement Plan of Action Using Wheels Pools and Falls Approach	Inadequate	3	Concur
9300802	Symptoms of GBT Induced in Salmon by TDGS of the Columbia and Snake Rivers	Adequate	1	Concur
9302900	Survival Estimates for Passage of Juvenile Salmonids Through Dams & Res.	Adequate	1	Concur
9602100	Gas Bubble Disease Research & Monitoring of Juvenile Salmonids	Adequate	1	Concur
Mainstem Pacific Lamprey Proposals				
9147	Prioritize Research and Restoration Needs for Pacific Lamprey	Inadequate	2	Inadequate Proposal
9402600	Pacific Lamprey Research and Restoration	Inadequate, Adequate Purpose	1	Inadequate Proposal
Mainstem Predator Control Proposals				
9007700	Northern Squawfish Management Program	Inadequate	1	Inadequate Proposal
9007800	Evaluate Predator Control and Provide Technical Support For PATH	Adequate	1	Concur
Mainstem Fall Chinook Research Proposals				
9078	Water Temperature Effects on Fall Chinook Salmon in the Snake & Columbia River	Inadequate	3	Concur
9406900	A Spawning Habitat Model to Aid Recovery Plans for Snake River Fall Chinook	Adequate	1	Concur
9701400	Evaluation of Juvenile Fall Chinook Stranding on the Hanford Reach	Adequate	1	Concur
9801003	Monitor and Evaluate the Spawning Distribution of Snake River Fall Chinook	Adequate	1	Concur
9801004	Monitor and Evaluate Yearling Snake R Fall Chinook Upstream of Lwr Granite	Adequate	1	Concur
Other Mainstem Proposals				
9105	Determine if Salmon are Successfully Spawning Below Lower Columbia MS Dams	Adequate	1	Concur
9131	Evaluate Fall Chinook & Chum Spawning, Production & Habitat Use in Columbia River	Inadequate	1	Inadequate Proposal
9018	Assess Habitat for Anadromous Fish Upriver of Chief Joseph Dam	Inadequate	2	Inadequate Proposal

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
9030	Etiology of Headburns in Returning Adult Salmonids	Adequate	3	Moderate Support
9047	Use Unsteady Flow to Aid Mainstem Passage of Juvenile Salmonids	Adequate	3	Recommend
9077	Evaluation of Interactions between American Shad and Salmon in Columbia River	Adequate	3	Moderate Support
9108	Evaluate Strobe Lights as a Juvenile Salmonid Guidance Behavioral Tool	Adequate	3	Moderate Support
9112	Numerical Evaluation of Flow Modification on Salmonid Migration	Inadequate, Adequate Purpose	3	Concur
9113	Evaluate Effects of Hydraulic Turbulence on Survival of Migratory Fishes	Adequate	3	Moderate Support
9135	Assess Impacts of Hydro Operations on Mainstem Habitats for Fish	Adequate	3	Moderate Support
Mainstem Resident Fish Proposals				
9079	Inventory Resident Fish Populations in Bonneville, Dalles, John Day Res.	Adequate	3	Recommend
9081	Impact of Exotic Fishes and Macrophytes on Juvenile Salmonids	Adequate	3	Moderate Support

c. Systemwide and Coordination

Despite the inherent value in organizing many FWP proposals by region and subbasin (including the mainstem as a "subbasin"), there remain a category of projects that are applicable systemwide. Some such projects involve program coordination. Others are for overall basin stock assessments or relevant techniques. A prominent group of eight proposals relate to the coordinated, interagency PATH effort. In terms of the proposal groupings provided by BPA for review, these are the proposals from the "All" category (Table 2) that were not separately evaluated as Mainstem proposals. There was a large divergence in quality of proposals included in the "all region." Some worthwhile work is represented by scientifically unacceptable proposals.

Several proposals are related to the application of coded-wire tag technology. This technology has been effective for many years as a way of rapidly and indelibly marking juvenile salmonids (often at hatcheries) with tiny bits of metal on which an identifier code is etched. Presence of the tag can be recognized subsequently in the fish's life cycle by sensitive metal detectors. Although the code can be read only once (usually the fish is killed to retrieve the tag), the tags provide exact evidence of a fish's

origin. Coded-wire tags are the principal means for identifying origin of fish harvested by commercial fisheries and are also used for other stock-identification purposes. The technology thus serves multiple and important uses for the FWP.

The current array of proposals represents a complex set of projects many of which should be incorporated into a single program proposal, experimental design and administrative oversight. The umbrella program should be subjected to a separate independent peer review. An overall stock-identification design is implied, but is not well described in most of the individual proposals. Some proposals have archaic titles referring to missing production groups that have been tagged for long periods of time.

V-B.2.c.1

The ISRP recommends that the various projects related to the large scale use of coded-wire technology be incorporated into an umbrella proposal, subjected to independent review, and placed on a multi-year funding track.

A number of proposals in this region and also in the Columbia Headwaters region related to research and management of white sturgeon. Although the work appears to be needed and justified, and many proposals were excellent, they are expensive projects and there appears to be opportunities for more systemwide coordination.

V-B.2.c.2

The ISRP recommends that all the white sturgeon studies in the basin including headwaters be coordinated and subjected to independent review and placed on a multi-year funding track.

Although PATH is a coordinated, interagency program, the individual proposals (except from the coordinator) often did not specify what PATH is, its function, the role of the individual proposal, and what the results have been both as a contribution to the overall PATH effort and as an individual project. The proposals do not clearly convey who are active participants and who are merely meeting attendees (both roles are valuable, but different).

V-B.2.c.3

The ISRP recommends that the entire PATH program be subjected to independent review, the proposals more effectively coordinated, and the entire set of proposals placed on a multi-year funding track.

Some proposals were not evaluated. Law enforcement proposals were judged to be outside the responsibilities of the ISRP. Proposals related to funding of ISAB and ISRP members were judged to present a conflict of interest. The Oregon wildlife umbrella proposal (No. 9705900, Securing Wildlife Mitigation Sites—Oregon) was not evaluated because it was not evident how this umbrella proposal related to the individual proposals reviewed in the individual subbasins.

The ISRP concurred with CBFWA's ranking for 26 out of the 48 projects in this region. The ISRP found 6 of the Tier 1 projects inadequate (Table 5).

Table 5. Comparative listing of the ISRP project evaluation, CBFWA priority, and the ISRP conclusions for the projects in the Systemwide and Coordination Subregion.

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
SYSTEMWIDE SUBREGION				
PATH Proposals				
9098	Technical Support For PATH - James J. Anderson	Inadequate	3	Concur
9303701	Technical Assistance With Life Cycle Modeling	Adequate	1	Concur
9600600	Path-Facilitation, Technical Assistance, and Peer Review	Adequate	1	Concur
9600800	PATH-Participation by State and Tribal Agencies	Adequate	1	Concur
9600801	Provide Scientific Input to the PATH Process	Inadequate	1	Inadequate Proposal
9601700	Provide Technical Support in the Plan For Analyzing and Testing Hypotheses	Adequate	1	Concur
9700200	PATH-UW Technical Support	Inadequate	1	Inadequate Proposal
9800100	Analytical Support-PATH and ESA Biological Assessments	Adequate	1	Concur
Coded-Wire Tag Proposals				
8201300	Coded-Wire Tag Recovery Program	Adequate	1	Concur
8906500	Annual Fish Marking – Missing Hatchery Production Groups	Inadequate	1	Inadequate Proposal

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
8906600	Annual Coded Wire Tag Program-Missing Production WA HTCH (WDF)	Adequate	1	Concur
8906900	Annual Coded Wire Tag Program – Missing Production OR Htc (ODFW)	Adequate	1	Concur
Regional Coordination and Independent Science Proposals				
9117	Facilitation Services for the Regional Forum	Adequate	1	Concur
9132	Implement Wy-Kan-Ush-Mi Wa-Kish-Wit Watershed Restoration Plan Now	Adequate	1	Concur
8906200	Prepare Draft Annual Implementation Work Plan	Adequate	1	Concur
8907201	Independent Scientific Advisory Board Support	Not Reviewed	3	Not Reviewed
9600500	Operate Independent Scientific Advisory Board	Not Reviewed	1	Not Reviewed
Systemwide Law Enforcement Proposals				
9202401	Enhanced Harvest & Habitat Law Enforcement for Anadromous Salmonids & Resident Fish in the Col. River Basin	Not Reviewed	1	Not Reviewed
9202409	Enhance Law Enforcement for Fish & Wildlife and Watersheds of the Nez Perce	Not Reviewed	1	Not Reviewed
Miscellaneous Research and Habitat Systemwide Proposals				
9048	Transfer Attributes From 1:100,000 to 1:24,000-Scale Hydrography	Adequate	3	Moderate Support
9049	Feasibility Study for a State-Wide Water Quality Data Sharing Mechanism	Inadequate	2	Inadequate Proposal
9083	Develop Tools to Evaluate the Effects of Selective Fisheries on Chinook	Adequate	2	Concur
9099	Educate Landowners and Agencies on Salmon Stream Restoration Methods	Inadequate	2	Inadequate Proposal
9125	Columbia River Basin Fish Key	Inadequate	3	Concur
9136	Influence of Marine-Derived Nutrient Influx on CRB Salmonid Production	Adequate	3	Moderate Support
9142	Produce Watershed Analysis Procedure for Salmon Habitat Restoration	Adequate	2	Concur
9143	Evaluate Disease Interactions Between Wild and Hatchery Salmonids	Adequate	2	Concur
9148	Develop Open Formula Diets to Yield Quality Smolts	Inadequate	2	Inadequate Proposal
9149	Evaluate and Monitor Bacterial Cold Water Disease impacting salmonids	Inadequate	2	Inadequate Proposal
8910700	Statistical Support for Salmonid Survival Studies	Adequate	1	Concur
8910800	Monitor and Evaluate Modeling Support	Adequate	3	Moderate Support
9005200	Performance/Stock Productivity Impacts of Hatchery Supplementation	Adequate	1	Concur

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
9202200	Physiological Assessment of Wild and Hatchery Juvenile Salmonids	Adequate	1	Concur
9202604	Spring Chinook Salmon Early Life History	Adequate	1	Concur
9203200	Life-Cycle Model Development and Application to System Planning	Adequate	1	Concur
9305600	Assessment of Captive Broodstock Technology	Adequate	1	Concur
9601900	Second-Tier Database For Ecosystem Focus	Adequate	3	Moderate Support
9702400	Avian Predation on Juvenile Salmonids in the Lower Columbia R: Phase II M&E	Adequate	1	Concur
Systemwide Bull Trout Proposals				
9033	Document Native Trout Populations	Adequate	1	Concur
9095	Bull Trout Population Assessment in the Columbia River Gorge, WA	Adequate	1	Concur
9405400	Bull Trout Genetics, Habitat Needs, L.H. Etc. in Central and N.E. Oregon	Adequate	1	Concur
Systemwide White Sturgeon Proposals				
9019	Monitor Reproductive Physiology of Columbia River White Sturgeon	Adequate	2	Concur
9084	Assessing Genetic Variation Among Columbia Basin White Sturgeon Populations	Adequate	1	Concur
9134	Effects of Catch & Release Angling and Exhaustive Stress on White Sturgeon	Adequate	3	Moderate Support
9150	Nutritional Status of Columbia River White Sturgeon	Adequate	In CBFWA Process	In CBFWA Process
8605000	White Sturgeon Mitigation and Restoration in the Columbia and Snake Rivers	Inadequate, Adequate Purpose	1	Inadequate Proposal
Umbrella Wildlife Proposals				
9609400	Washington Department of Fish & Wildlife Habitat Units Acquisition	Inadequate, Adequate Purpose	1	Inadequate Proposal
9106100	WDFW Projects (part of 9609400)	Inadequate, Adequate Purpose	1	Inadequate Proposal
9705914	Securing Wildlife Mitigation Sites-Oregon	Not Reviewed	1	Not Reviewed
9705900	Securing Wildlife Mitigation Sites – Oregon (Umbrella)	Not Reviewed	1	Not Reviewed

d. Lower Columbia

ISRP's Lower Columbia subregion is not exactly isomorphic with the Lower Columbia Subregion in CBFWA's 1998 Annual Implementation Work Plan. The ISRP grouping included all the Lower Columbia River area plus the Hood, White Salmon, and Wind subbasins, which are part of CBFWA's Lower Mid-Columbia subregion. As a group, the Lower Columbia subregion as defined by CBFWA and its tributaries are a low priority for funding (Figure 2), which is consistent with the FWP. On page 4-5 Council stated, "Because most of the loss of salmon and steelhead production as a result of hydroelectric development has occurred above Bonneville Dam, the Council will continue to focus its efforts in this area" (NPPC 1994).

The Annual Implementation Work Plan does not provide a general analysis and summary of its Lower Columbia subregion, but it does for the Willamette subbasin. Willamette Falls was a natural barrier to upstream migration that seasonally blocked the migration of most anadromous stocks; winter steelhead and spring chinook were the exceptions that did spawn above the falls. A hydro facility at Willamette Falls is the only generation plant on the mainstem of the Willamette and passage facilities there have recently increased access to migrating salmon. Hydroelectric and flow control projects on the tributaries of the Willamette have created temperature problems.

The majority of land along the Willamette River is private and is used for agricultural purposes. The Annual Implementation Work Plan does not go into much detail on the specific fisheries problems that need to be solved in the Willamette. Anadromous fish species targeted for management in the Willamette River include spring chinook, winter and summer steelhead, Pacific lamprey, and white sturgeon. Resident species targeted for management include bull, rainbow, and cutthroat trout, white fish and Oregon chub.

There are few targeted anadromous fish proposals for the Willamette: one deals with an existing passage facility, one deals with an existing hatchery, and one proposes a study of spring chinook life history-habitat relationships.

Hood River drains approximately 352 square miles of north central Oregon and it enters the Columbia River above Bonneville Dam. Anadromous species targeted for management include spring and fall chinook salmon, winter and summer steelhead, coho salmon and lamprey.

Major problems limiting fish production include:

1. Use of non-native/out of basin fish in hatchery programs for the Hood River.

2. Natural turbidity from glaciers on Mount Hood.

3. Unscreened or inadequately screened diversions.

4. Poor water quality.

5. Water diversions.

Of the 34 proposals submitted in the ISRP Lower Columbia category, 6 (with a total budget request of 1.75 million dollars) were connected with the Hood River Hatchery.

The Hood River production proposals were especially difficult to evaluate. Suites of linked proposals/projects, such as those, that compose a larger program, should be submitted and reviewed in depth as a single unit in a single, large integrated proposal for multi-year funding. The Hood River production proposals were intelligibly written in contrast to some of the proposals for supplementation projects in other subregions. But, the Hood River production proposals were not of uniformly good quality. The ISRP was encouraged to see that the steelhead supplementation portion of the proposals described a shift to indigenous Hood River stocks and proposed to eliminate passage of out-of-basin stocks into the subbasin.

A fair fraction of the proposals in the Lower Columbia category were directed at securing wildlife mitigation sites. The ISRP found many of these proposals difficult to review properly, because they did not describe tasks specific to the sites. Many of the proposals are essentially identical, replicate of a common boilerplate. Still, the projects are well within the scope of parent wildlife issues and programs. More details are needed to evaluate the proposals, especially the monitoring and evaluation of results. In addition, fisheries habitat protection proposals (for example, Project No. 9126, Hood River Fish Habitat Project) should be coordinated with the wildlife projects.

Of the 34 proposals, CBFWA ranked 23 in Tier 1, 5 in Tier 2, and 6 in Tier 3. The ISRP concurred with the rankings in 20 out of the 34 cases. One block of non-concurrence was the six Hood River hatchery proposals, which were all ranked Tier 1 by CBFWA. The ISRP defers its recommendation until after the comprehensive review is completed. The only other disagreements were: one proposal ranked Tier 1 by CBFWA that

the ISRP recommends to terminate; and five proposals ranked Tier 1 by CBFWA that the ISRP found inadequate (Table 6).

Table 6. Comparative listing of the ISRP project evaluation, CBFWA priority, and the ISRP conclusions for the projects in the Lower Columbia Subregion.

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
LOWER COLUMBIA SUBREGION				
LOWER COLUMBIA MAINSTEM SUBBASIN				
9058	Restore Chinook Passage into Woodard Creek & Enhance Habitat	Inadequate, Adequate Purpose	3	Concur
9089	Classify Riparian and Wetland Vegetation in the Columbia Basin of Wash.	Inadequate	2	Concur
9306000	Evaluate Columbia River Select Area Fisheries	Adequate	1	Concur
9705909	Securing Wildlife Mitigation Sites-Oregon, Mitchell Point	Inadequate	1	Inadequate Proposal
CHINOOK SUBBASIN				
9123	Restore Chinook Watershed	Adequate	3	Moderate Support
COWLITZ SUBBASIN				
9088	Implement Best Management Practices	Inadequate, Adequate Purpose	3	Concur
9127	Development of a Cowlitz Watershed Management Plan	Adequate	3	Moderate Support
LEWIS SUBBASIN				
9104	Conduct Baseline Habitat and Pop. Dynamics Studies on Lampreys in Cedar Cr.	Adequate	1	Concur
WILLAMETTE SUBBASIN				
McKenzie Habitat Proposals				
9036	McKenzie Watershed Habitat Assessment and Project Prioritization	Adequate	2	Concur
9037	Acquire Fish and Wildlife Habitat in the McKenzie Watershed	Adequate	2	Concur
9038	Evaluate Spring Chinook Life History-habitat Relationships in the McKenzie	Adequate	2	Concur
9607000	McKenzie River Focus Watershed Coordination	Adequate	1	Concur
Other Willamette Proposals				
8612400	Inspection Service For Little Fall Creek Passage	Inadequate	1	Inadequate Proposal Terminate

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
8816000	Willamette Hatchery Oxygen Supplementation	Adequate	1	Concur
9405300	Bull Trout Assessment - Willamette/McKenzie	Adequate	1	Concur
9107800	Burlington Bottoms Wildlife Mitigation Project	Inadequate	1	Inadequate Proposal
9205900	Amazon Basin/Eugene Wetlands Phase II	Adequate	1	Concur
9206800	Implementation of Willamette Basin Mitigation Program—Wildlife	Inadequate, Adequate Purpose	1	Inadequate Proposal
9206801	Implementation of Willamette Basin Mitigation Program—Watershed	Inadequate, Adequate Purpose	3	Concur
9705906	Securing Wildlife Mitigation Sites-Oregon, McKenzie River Islands	Adequate	1	Concur
9705907	Securing Wildlife Mitigation Sites-Oregon, E.E. Wilson WMA Additions	Inadequate, Adequate Purpose	1	Inadequate Proposal
9705908	Securing Wildlife Mitigation Sites-Oregon, Multnomah Channel	Adequate	1	Concur
9705916	Tualatin River National Wildlife Refuge Additions	Adequate	1	Concur
SANDY SUBBASIN				
9061	River Wetlands Restoration and Evaluation Program	Adequate	1	Concur
9062	Sandy River Delta Riparian Reforestation	Adequate	1	Concur
WIND SUBBASIN				
9154	Wind River Ecosystem Restoration	Adequate	1	Concur
HOOD SUBBASIN				
9145	Evaluate the Status of Columbia River Sea-Run Cutthroat Trout	Adequate	2	Concur
Hood River Production Program				
9126	Hood River Fish Habitat Project	Adequate	1	Defer
8805303	Hood River Production Program (HRPP)	Adequate	1	Defer
8805304	Monitor Actions Implemented Under the Hood River Production Program.	Adequate	1	Defer
8902900	Hood River Production Program - Pelton Ladder - Hatchery	Adequate	1	Defer
9301900	Hood River Production Program - Oak Springs, Powerdale, Parkdale O&M	Adequate	1	Defer
9500700	Hood River Production Program - PGE: O&M	Adequate	1	Defer
WHITE SALMON SUBBASIN				
9156	White Salmon River Watershed Enhancement Project	Adequate	3	Moderate Support

e. Columbia Plateau

1) Deschutes River

The Deschutes River is the second largest watershed in Oregon and drains an area that is about 62% in private ownership, 15% under federal management and about 21% is in tribal lands. The Deschutes enters the Columbia at river mile 205. The basin extends from the eastern slopes of the Cascade mountains to the arid lands of the Cascade rain shadow. Rainfall in the basin ranges from 9 to 14 inches in the eastern side of the basin to over 100 inches on the slopes of the Cascade Mountains. The Pelton-Round Butte Hydroelectric Complex blocks anadromous migration at river mile 100. Spring and fall chinook, summer steelhead, Pacific lamprey, resident redband trout, bull trout, and kokanee are the fish species that receive major management emphasis.

There are four hatcheries in the basin (Warm Springs, Round Butte, Oak Springs and Fall River). All the hatcheries are funded by sources other than the FWP and BPA.

Major constraints on fish production in the basin include:

1. Overgrazed and degraded riparian areas in tributaries.

2. Poor survival in eastside tributaries because of low stream flows and high water temperatures caused by irrigation and overgrazing.

3. Round Butte and Pelton Dams eliminated spawning and rearing habitat above river mile 100 for spring chinook, sockeye, and summer steelhead.

4. Juvenile fish are lost in unscreened diversion ditches.

Of the 14 projects submitted to BPA for funding, all but two are related to the protection or improvement of habitat in the basin. One of the two projects not directly related to habitat is an educational outreach project that could influence habitat. The other project actually extends beyond the Deschutes basin and its purpose is to collect and cryogenically preserve gametes of salmonid populations.

The emphasis on habitat is appropriate for the Deschutes Basin and the mix of proposed projects generally address the identified problems. However the ISRP is concerned that the proposed habitat restoration

projects in the basin are not organized, prioritized, and guided by appropriate watershed assessments. The guidance provided by a watershed assessment would be particularly important for watershed councils and their activities. (See recommendation V-C.3.1, page 93.)

CBFWA listed seven proposals in Tier 1 and of those the ISRP concurred with CBFWA on three, but found four of the Tier 1 projects technically inadequate. CBFWA listed four projects in Tier 2. The ISRP concluded three of those are inadequate. The ISRP found one of the Tier 2 projects, the preservation of gametes (Project No. 9153), to be innovative and worthy of funding in FY 99. Project No. 9153 proposes to use an established technique to take proactive steps to preserve germ plasm and conserve biodiversity of selected salmon stocks before they slip into endangered or threatened status. The project is looking ahead to prevent a problem—loss of genetic diversity—before it occurs.

V-B.2.e.1.1
The ISRP recommends that Project No. 9153 (Preserve Cryogenically the Gametes of selected Mid-Columbia Salmonid Stocks) be funded in FY 99.

CBFWA listed three projects in Tier 3 and of those, the ISRP concurred with two and gave moderate support to one project (Table 7).

Table 7. Comparative listing of the ISRP project evaluation, CBFWA priority, and the ISRP conclusions for the projects in the Deschutes Subbasin.

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
COLUMBIA RIVER PLATEAU SUBREGION ***DESCHUTES SUBBASIN*** ***Trout Creek Habitat Proposals***				
9003	Restore/Enhance Trout Creek @ Ashwood Phase II	Inadequate	2	Inadequate Proposal
9004	Restore/Enhance Trout Creek @ Ashwood Phase I	Inadequate	2	Inadequate Proposal
9005	Irrigation System Replacement Trout Cr. @ Willowdale II 1999 Funds	Inadequate	1	Inadequate Proposal
9006	Restore/Enhance Trout Creek @ Willowdale	Inadequate	2	Inadequate Proposal
9404200	Trout Creek Habitat Restoration Project	Adequate	1	Concur
9705910	Securing Wildlife Mitigation Sites-Oregon, Trout Creek Canyon	Inadequate, Adequate Purpose	1	Inadequate Proposal
Other Deschutes Proposals				
9007	Jefferson Co./Middle Deschutes Watershed Coordinator/Council Support 1999	Inadequate	1	Inadequate Proposal
9040	Central Oregon Watershed Enhancement and Outreach	Inadequate, Adequate Purpose	3	Concur
9133	Bakeoven Riparian Assessment	Adequate	1	Concur
9138	Warm Springs Reservation 1999 Watershed Enhancement Project	Adequate	1	Concur
9153	Preserve Cryogenically the Gametes of selected Mid-Columbia Salmonid Stocks	Adequate	2	Recommend
9303000	Buck Hollow Watershed Enhancement	Adequate	3	Moderate Support
9103	Upper Deschutes Basin Watershed Coordinator/Council Support	Inadequate	3	Concur
9705913	Securing Wildlife Mitigation Sites-Oregon, South Fork Crooked River	Inadequate, Adequate Purpose	1	Inadequate Proposal

2) John Day River

The John Day River drains 8,100 square miles in east-central Oregon and is the longest free-flowing river solely containing wild salmon and steelhead in the Columbia Basin. Land ownership in the basin is 60%

private and 40% federal (U. S. Forest Service (USFS) and Bureau of Land Management(BLM)). Anadromous species that are the focus of management activities are spring chinook salmon and summer steelhead. Although there are no escapement records, managers believe wild fall chinook also spawn in the river. Pacific lamprey is also a species of concern in the John Day River. Bull trout are a resident salmonid species of concern in the upper portions of the basin.

The anadromous salmonids in the John Day River are wild. There is no hatchery program either conventional or supplementation in the basin. Since the managers have emphasized management without the use of artificial propagation, the impediments to production focus on habitat degradation and include:

1. Poor water quality (low flows/high temperatures and pollutants) reduce survival of juveniles and restrict the range of spawning and rearing habitat.

2. Low flows and diversion barriers restrict adult and juvenile migration.

3. Riparian degradation and lack of pools reduces adult holding and juvenile rearing habitat.

4. Water quality, quantity and sediment problems reduce spawning success.

All of the projects proposed for the John Day Basin address habitat protection or restoration. The emphasis on habitat is consistent with the management direction of the basin and the identified problems. The ISRP is concerned that all habitat projects in the basin are not organized, prioritized, and guided by appropriate watershed assessments. (See recommendation V-C.3.1 on page 93).

CBFWA placed 10 of the 12 projects in Tier 1. The ISRP concurred with 8 of the Tier 1 projects, but found 2 of the proposals inadequate. Two projects were placed in Tier 3 and the ISRP concurred with those decisions (Table 8).

Table 8. Comparative listing of the ISRP project evaluation, CBFWA priority, and the ISRP conclusions for the projects in the John Day Subbasin.

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
COLUMBIA RIVER PLATEAU SUBREGION				
JOHN DAY SUBBASIN				
9012	Mitigate Effects of Runoff & Erosion on Salmonid Habitat in Pine Hollow	Adequate	1	Concur
9045	Eliminate Gravel Push-Up Dams on Lower North Fork John Day	Adequate	1	Concur
9091	South Tower Fire Recovery Projects	Inadequate	3	Concur
9137	John Day Watershed Restoration	Adequate	1	Concur
9144	Monitor Natural Escapement & Productivity of John Day Basin Spring Chinook	Adequate	1	Concur
8400800	North Fork John Day Habitat Improvement	Inadequate, Adequate Purpose	3	Concur
8402100	Protect and Enhance John Day River Fish Habitat	Adequate	1	Concur
9303800	North Fork John Day Area Riparian Fencing	Inadequate, Adequate Purpose	1	Inadequate Proposal
9605300	North Fork John Day River Dredge Tailings Restoration	Inadequate, Adequate Purpose	1	Inadequate Proposal
9703400	Monitor Fine Sediment and Overwinter Sedimentation in John Day & Gr Ronde	Adequate	1	Concur
9139	Acquisition of Pine Creek Ranch	Adequate	1	Concur
9140	Acquisition of Pine Creek Ranch	Adequate	1	Concur

3) Yakima River

The Yakima River drains 6,155 square miles in south central Washington State and its pattern of land ownership is 32% private, 30% tribal, 28% federal, and 10% state. The Yakima River was once a major producer of chinook salmon, but habitat degradation has reduced natural production to a small fraction of its historical level. Anadromous species that are the current management focus include spring and fall chinook salmon, coho salmon, and summer steelhead. Summer chinook salmon and sockeye salmon were extirpated. Little is known about the Pacific lamprey.

A major supplementation project is underway in the Yakima Basin. In addition to increasing the production of anadromous salmonids in the basin, the purpose of the project is to serve as a test of the principles of supplementation. The ISRP deferred judgment on the entire group of proposals related to the Yakima supplementation program until after the comprehensive review of artificial propagation has been completed. We do note that some of the proposals related to the Yakima supplementation program were technically very poor. Several proposals were simply the same "boiler plate" description of the overall program even though the proposals supposedly addressed such different topics as hatchery construction or evaluating the feasibility and potential risks of restoring Yakima River coho.

Salmonid habitat has been severely degraded in parts of the Yakima Basin leading to habitat fragmentation and poor connectivity. In addition, several other specific habitat problems limit salmonid production including:

1. Low flows at diversions, water quality and pesticides, and illegal harvest and harassment reduce adult migration and pre-spawning survival.

2. Low flows and inadequate diversion screening reduces juvenile migration survival.

3. Low flows, high temperatures, and sedimentation reduce fall chinook spawning success.

4. Sediment, predators, and lack of side channel refuges limit juvenile rearing and over-wintering survival. Sediment also limits survival to emergence for all species of salmonids in virtually all reaches of the Yakima Basin.

5. Low flows and other barriers have reduced the amount of habitat formerly accessible to salmon.

6. Other problems leading to ecosystem degradation include: mining waste disposal, grazing, residential development, inadequate enforcement of existing laws, and inadequate storm water and riparian management.

In a basin like the Yakima, where there is severe habitat fragmentation, it is critical that restoration projects be guided by the results of a watershed assessment. The ISRP was encouraged to note watershed assessments are part of some of the proposed habitat projects in the basin. However, a significant amount of proposed habitat work does

not appear to be guided by or related to a watershed assessment. More effort needs to be allotted to watershed assessment and to the integration of the large number of habitat projects by all agencies and institutions. (See Recommendation V-C.3.1 page 93.)

CBFWA assigned 27 proposals for the Yakima Basin to the Tier 1 category. The ISAB concurred with 10 of those, we placed 13 in the deferred category and 4 were inadequate. CBFWA assigned 19 proposals to Tier 2. The ISRP concurred with 9 of those projects and 10 others were inadequate. Two projects were assigned to Tier 3 and the ISAB concurred with that decision (Table 9).

Table 9. Comparative listing of the ISRP project evaluation, CBFWA priority, and the ISRP conclusions for the projects in the Yakima Subbasin.

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
COLUMBIA RIVER PLATEAU SUBREGION				
YAKIMA SUBBASIN				
Yakima Fisheries Program: Artificial Production				
8811500	Yakima Hatchery Construction	Inadequate, Adequate Purpose	1	Defer
8812001	Yakima/Klickitat Fisheries Project Management	Inadequate, Adequate Purpose	1	Defer
8812005	Video Fish Monitoring Project	Inadequate, Adequate Purpose	1	Inadequate Proposal
8812008	Fisheries Technician Field Activities	Inadequate, Adequate Purpose	1	Defer
9105500	Supplementation Fish Quality (Yakima)	Inadequate, Adequate Purpose	1	Defer
9405900	Yakima Basin Environmental Education	Inadequate, Adequate Purpose	1	Inadequate Proposal
9503300	O&M of Yakima Fish Protection, Mitigation & Enhancement Facilities	Inadequate, Adequate Purpose	1	Defer
9506300	Yakima/Klickitat Monitoring and Evaluation Program	Inadequate, Adequate Purpose	1	Defer
9506402	Upper Yakima Species Interactions Studies	Inadequate, Adequate Purpose	1	Defer

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
9506404	Policy/Technical Involvement & Planning for YKFP	Inadequate, Adequate Purpose	1	Defer
9506406	Monitor Supplementation Response Variable For the YKFP	Inadequate, Adequate Purpose	1	Defer
9603301	Supplement and Enhance the Two Existing Stocks of Yakima R. Fall Chinook	Inadequate, Adequate Purpose	1	Defer
9603302	Evaluate the Feasibility and Potential Risks of Restoring Yakima R. Coho	Inadequate, Adequate Purpose	1	Defer
9701300	Operation & Maintenance For Upper Yakima River Supplementation Facility	Inadequate, Adequate Purpose	1	Defer
9706200	Development /Refinement of Natural Production Objectives & Strategies	Inadequate, Adequate Purpose	1	Defer
Yakima Fish Screen Proposals				
8506200	Evaluate the Effectiveness of Fish Screens	Adequate	1	Concur
9105700	Yakima Phase 2 Screen Fabrication	Adequate	1	Concur
9107500	Yakima Phase II Screens - Construction	Adequate	1	Concur
9200900	Yakima Screens - Phase II - O & M	Adequate	1	Concur
Yakima Education Proposal				
9032	Teach Adults to Become Holistic Master Watershed Stewards	Adequate	2	Concur
Little Naches Habitat Proposals				
9065	Little Naches Streambank Restoration	Adequate	2	Concur
9158	Little Naches River Riparian and In-Channel Habitat Enhancement Project	Adequate	2	Concur
Yakima Agricultural Habitat Proposals				
9068	Improve Stream Habitat Through Reduction in Farm Runoff	Adequate	2	Concur
9069	Enhance Upper Yakima River Basin Fish Habitat	Adequate	2	Concur
9070	Improve Water Quality Through Sedimentation and Nutrient Reduction	Inadequate, Adequate Purpose	2	Inadequate Proposal
9071	Improve Yakima River Water Quality	Inadequate, Adequate Purpose	2	Inadequate Proposal
9072	Improve Return Flow Water Quality	Inadequate, Adequate Purpose	2	Inadequate Proposal
9073	Improve Water Quality Monitoring Program	Inadequate	2	Inadequate Proposal

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
9074	Construct Sediment Settling Basins	Inadequate, Adequate Purpose	2	Inadequate Proposal
9075	Construct Wetlands	Inadequate	2	Inadequate Proposal
9076	Evaluate Return Flow Recovery	Inadequate	2	Inadequate Proposal
Other Yakima Habitat Proposals				
9067	Coordinate/Facilitate Watershed Project Planning/Implementation	Inadequate, Adequate Purpose	1	Inadequate Proposal
9100	Reestablish Safe Access into Tributaries of the Yakima Subbasin	Adequate	1	Concur
9101	Restore Upper Toppenish Creek Watershed	Adequate	1	Concur
9102	Ahtanum Creek Watershed Assessment	Adequate	1	Concur
9109	Acquisition of Water and Floodplain Fisheries Habitat in the Yakima Basin	Adequate	2	Concur
9114	Stabilizing Stream Channels in the Cabin Creek Watershed	Adequate	2	Concur
9160	Construct Sediment Settling Basin	Inadequate	2	Inadequate Proposal
9161	Improve Return Flow Water Quality From Farms	Inadequate	2	Inadequate Proposal
9162	Improve Water Quality Monitoring Program	Inadequate	2	Inadequate Proposal
9164	Analyze Ahtanum Creek Storage Project	Inadequate	3	Concur
9603501	Satus Watershed Restoration	Adequate	1	Concur
9704900	Teanaway River Instream Flow Restoration	Inadequate	1	Inadequate Proposal
9705100	Yakima Basin Side Channels	Adequate	1	Concur
9705200	Enhancement Between Selah and Union Gaps	Adequate	2	Concur
9705300	Toppenish-Simcoe Instream Flow Restoration	Adequate	2	Concur
9206200	Yakama Nation - Riparian/Wetlands Restoration	Adequate	1	Concur
Yakima Resident Fish Assessment Proposal				
9110	Assess Resident Fish Within Toppenish Creek and Satus Creek	Inadequate	3	Concur

4) Umatilla River

The Umatilla River Basin in northeastern Oregon covers approximately 2,350 square miles. The river originates on the west slope of the Blue Mountains and flows 115 miles to the northwest, where it enters the Columbia River at RM 289 in the town of Umatilla, Oregon. The elevation of the mouth is 270 feet and the headwaters rise to 4,950 feet. Mean annual precipitation in the subbasin ranges from 10 inches/year at Hermiston to 50 inches/year in the headwaters. The watershed is divided into two physiographic regions: (1) the Deschutes-Umatilla plateau, west of Pendleton, into which the Umatilla River has cut a low valley that is dominated by dryland and irrigated crops and sagebrush-grass communities, and (2) the foothills and Blue Mountains, east of Pendleton, which are dissected into steep canyons dominated by shrub and conifer communities.

Chinook and coho salmon were extirpated from the Umatilla River early in the twentieth century due to low flows and high temperatures created by large irrigation withdrawals in the lower reaches of the river and principal tributaries. The most significant declines were associated with the Hermiston Power and Light Hydroelectric Project in 1910 (RM 10) and the Threemile Falls Dam irrigation diversion in 1914 (RM 3). Both spring chinook salmon (Carson stock) and fall chinook salmon (upriver brights) have since been reintroduced beginning in 1983, but annual returns of salmon are currently less than 2,000 adults of hatchery origin. Early run coho salmon (lower Columbia stock) have also been reintroduced and their numbers are also low. Summer steelhead are the only anadromous salmonid to have survived the early twentieth century and the hatchery program propagates Umatilla broodstock with recent returns numbering about 2,000 adults. The status of the Pacific lamprey population in the Umatilla River is apparently unknown. Bull trout are known to inhabit some of the headwater streams.

At present, the greatest limiting factor to natural production in the watershed is poor water quality and quantity, especially in the lower river. Very low flows, high temperatures (>80^{o} F), and agricultural pollutants are prevalent in summer in the Deschutes-Umatilla plateau. Irrigation withdrawals occasionally dry up the lower reaches of tributaries trapping migrating adult salmon and steelhead in mainstem pools where they are subjected to harsh environmental conditions. Loss of riparian vegetation and streambank erosion caused by grazing and logging-related impacts have exacerbated poor water quality and added sediment to streambeds in the upper watershed.

Umatilla Hatchery Projects. Salmon restoration activities in the Umatilla subbasin include a hatchery system with several satellite facilities. The Umatilla Hatchery Master Plan (Confederated Tribes of the Umatilla Indian Reservation and Oregon Department of Fish and Wildlife) was completed in 1990 and the hatchery began operation in 1991. Currently the hatchery system is operating at less than full capacity due to low summer flows and insufficient adult escapement. The production capacity of the hatchery complex is 290,000 pounds, but 1999 production will be less than half that amount.

The ISRP defers the final evaluation of the Umatilla Hatchery Projects until the comprehensive review of artificial production is completed. Overall, there was insufficient technical justification in the hatchery proposals for an adequate scientific assessment of the hatchery and supplementation projects. For example, the proposed comparison of Michigan vs. Oregon rearing systems did not acknowledge the research that has been done on this subject in Willamette River hatcheries. Some proposals acknowledged the shortage of suitable water but failed to provide a clear indication of how the hatchery system could improve production without sufficient high quality water -- yet projections for future run sizes were contingent on the hatcheries operating at levels near maximum capacity, clearly an impossibility given the shortage of adult recruits and insufficient water. Two exceptions, however, were the monitoring and evaluation project (9000500) and the outmigration and survival project (8902401), which were generally well presented and justified. Although each project was evaluated individually, as a whole the ISRP did not find the Umatilla hatchery proposals scientifically adequate, based on the level of information in many of them.

CBFWA assigned 11 proposals for the Umatilla Basin to the Tier 1 category. The ISAB concurred with 4 of those, we placed 5 in the deferred category and 2 were not reviewed (Table 10). CBFWA assigned 2 proposals to Tier 3. The ISRP found both of these worthy of funding in FY 99.

V-B.2.e.4.1

The ISRP recommends that Project Nos. 9016 (Research/Evaluate Restoration of Northeast Oregon Streams and Develop Management Guidelines) and 9141 (Strategies For Riparian Recovery: Plant Succession & Salmon) be funded in FY 99.

The ISRP believes that innovative research will be needed to determine where and when stream and riparian restoration efforts will be effective. Many existing restoration projects have been implemented based on untested assumptions about project life and putative ecological benefits. Projects 9016 and 9141 will help provide much-needed answers about natural recovery processes in streams and riparian zones, and point to opportunities for human intervention to hasten recovery when it is needed, but not when it will require frequent and expensive repair. The results of these projects will also be very useful to the process of watershed assessment, in which areas needing different types of restoration (e.g., active vs. passive) will need to be identified.

Table 10. Comparative listing of the ISRP project evaluation, CBFWA priority, and the ISRP conclusions for the projects in the Umatilla Subbasin.

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
COLUMBIA RIVER PLATEAU SUBREGION				
UMATILLA SUBBASIN				
Umatilla Hatchery Program				
8343500	Operate and Maintain Umatilla Hatchery Satellite Facilities	Inadequate, Adequate Purpose	1	Defer
8802200	Trap and Haul in the Umatilla and Walla Walla Basins	Inadequate, Adequate Purpose	1	Defer
8902401	Evaluate Juvenile Salmonid Outmigration and Survival in the Lower Umatilla	Inadequate, Adequate Purpose	1	Defer
8903500	Umatilla Hatchery Operation and Maintenance	Inadequate, Adequate Purpose	1	Defer
9000500	Umatilla Hatchery Monitoring and Evaluation	Inadequate, Adequate Purpose	1	Defer
Other Umatilla Proposals				
9016	Research/Evaluate Restoration of NE Ore Streams and Develop Management Guidelines	Adequate	3	Recommend
9141	Strategies For Riparian Recovery: Plant Succession & Salmon	Adequate	3	Recommend
8710001	Enhance Umatilla River Basin Anadromous Fish Habitat	Adequate	1	Concur
8710002	Protect & Enhance Coldwater Fish Habitat in the Umatilla River Basin	Adequate	1	Concur
9000501	Umatilla and Walla Walla Basin Natural Production M&E Project	Adequate	1	Concur

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
8343600	Umatilla Passage O&M	Not Reviewed	1	Not Reviewed
8902700	Power/Repay O&M For USBR CPR Pumping Project	Not Reviewed	1	Not Reviewed
9506001	Enhance Squaw Creek Watershed for Anadromous Fish & Wildlife Habitat	Adequate	1	Concur

5) Remaining Subbasins in the Columbia Plateau Subregion

This section combines all the smaller subbasins in the Columbia Plateau and includes the following watersheds: Tucannon, Walla Walla, and Klickitat Rivers and Asotin, Rock, and Fifteenmile Creeks. In addition it covers some proposals that address activities in several smaller subbasins within the Columbia Plateau subregion.

a) Tucannon/Asotin

The Tucannon and Asotin watersheds are on the eastern edge of the Columbia Plateau subregion. They discharge into the lower Snake River. Constraints on salmonid production in the Tucannon River include:

1. Production of anadromous salmonids is impacted by high temperatures, irrigation diversion, sedimentation, loss of riparian vegetation, and passage problems.

2. Extensive stream channelization has contributed to increased velocities and flash flooding.

3. Levees have narrowed the floodplain and contributed to channelization.

4. Over the past 50 years, farming, livestock management, recreational activities, and catastrophic flood events have contributed to habitat degradation.

The research and habitat management proposals for the Tucannon/Asotin subbasins appear to address recognized problems and information needs.

Of the five projects proposed for this subbasin, CBFWA assigned four to Tier 1 and one to Tier 2. The ISRP concurred with three of those decisions. The ISRP did not review one proposal (Table 11).

Table 11. Comparative listing of the ISRP project evaluation, CBFWA priority, and the ISRP conclusions for the projects in the Tucannon/Asotin Subbasins.

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
COLUMBIA RIVER PLATEAU SUBREGION				
TUCANNON SUBBASIN				
9008	Eval. of Fall Chinook Production & Habitat Conditions in Lw.Tucannon River	Adequate	2	Concur
9202602	Implement Eastern Washington Model Watershed Plans	Not Reviewed	1	Not Reviewed
9401805	Enhance Habitat For Spring Chinook, Summer Steelhead, and Bull Trout	Adequate	1	Concur
9401806	Enhance Habitat For Spring & Fall Chinook, Summer Steelhead and Bull Trout	Adequate	1	Concur
9401807	Enhance Habitat For Fall Chinook, Steelhead and Bull Trout	Adequate	1	Concur

b) Klickitat River/Rock Creek

The Klickitat River drains 1,350 square miles of south-central Washington. About 75% of the basin is forested and major land ownership is divided among the Yakama Indian Nation, private land owners, and the State of Washington. The anadromous fish species receiving major management emphasis are spring and fall chinook, summer steelhead, and coho. Constraints on production include:

1. The barrier dam at Klickitat Hatchery and Castile Falls restrict spring chinook access to habitat in the upper river.

2. Poor design and maintenance of forest road crossings restrict passage and have degraded salmonid incubation and rearing habitat.

3. Low flows in some tributaries due to over appropriation of water constrain production.

4. Excessive nutrients from farming and sewage outfalls cause excessive algal growth.

5. Sediment from glacial runoff and insufficient large woody debris have reduced holding and rearing areas.

6. Land use patterns have increased the frequency of flash floods in winter.

Five projects were proposed to address these habitat problems. The ISRP strongly agreed with the need for watershed analysis as proposed in Project Nos. 9506800 and 9159. However, the proposal for Project No. 9506800 was technically inadequate. Its technical justification was vague, it was difficult to determine if the project was a supplementation or a watershed program, and the description of methods was vague. The ISRP did not review the one law enforcement proposal.

CBFWA placed two of the five proposed habitat projects in Tier 1. The ISRP concurred with one of these and found the other proposal inadequate. Three projects were placed in Tier 2. The ISRP concluded that two of those proposals were inadequate (Table 12). The remaining Tier 2 project (No. 9159) addressed the need for watershed assessment and the ISRP gave it a high priority. Our recommendation for funding in FY 99 is consistent with our recommendation that habitat restoration be proceeded by watershed assessment.

V-B.2.e.5.b.1
The ISRP recommends that Project No. 9159 (Rock Creek Watershed Assessment and Restoration Project) be funded in FY 99.

Table 12. Comparative listing of the ISRP project evaluation, CBFWA priority, and the ISRP conclusions for the projects in the Klickitat River/Rock Creek Subbasins.

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
COLUMBIA RIVER PLATEAU SUBREGION				
KLICKITAT SUBBASIN				
9001	Monitor Water Quality and Quantity in Eastern Klickitat County	Inadequate	2	Inadequate Proposal
9002	Monitor Water Quality and Quantity in L. Klickitat R. and Its Tributaries	Inadequate	2	Inadequate Proposal
9066	Protect Klickitat River and Wind River Salmonids	Not Reviewed	3	Not Reviewed

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
9506800	Klickitat Passage/Habitat Improvement M&E	Inadequate, Adequate Purpose	1	Inadequate Proposal
9705600	Lower Klickitat River Riparian & In-Channel Habitat Enhancement Project	Adequate	1	Concur
ROCK CREEK SUBBASIN				
9159	Rock Creek Watershed Assessment and Restoration Project	Adequate	2	Recommend

c) Fifteenmile Creek

Fifteenmile Creek is a small basin draining 373 square miles in north central Oregon. The USFS manages 19% of the basin which is in the Mount Hood National Forest. Private ownership in the lower reaches is used primarily for dry land farming and other agricultural purposes. Winter steelhead receives the primary management focus. Some spring chinook salmon may spawn in the basin and the managers are developing their objectives for Pacific lamprey. Production is constrained by:

1. Poor water quality and low flows due to irrigation withdrawals, loss of riparian zones due to channelization, logging, and grazing.

2. Dry land farming and grazing have eliminated or degraded the riparian zones in much of the middle and lower drainage.

3. Timber harvest in the upper basin reduced natural water storage causing channel shifts and more frequent high runoff events.

4. Water withdrawals for irrigation reduce stream flows by early summer and juvenile salmonids are lost in unscreened diversions.

CBFWA placed all three proposals for projects in Fifteenmile Creek in Tier 1 and the ISRP concurred with that decision (Table 13).

Table 13. Comparative listing of the ISRP project evaluation, CBFWA priority, and the ISRP conclusions for the projects in the Fifteenmile Creek Subbasin.

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
COLUMBIA RIVER PLATEAU SUBREGION				
FIFTEENMILE CREEK SUBBASIN				
9087	Acquire 1860 Fifteenmile Creek Irrigation Water Right and Convert to Instream	Adequate	1	Concur
9146	Evaluate Effects of Habitat Work Conducted in Fifteenmile Creek	Adequate	1	Concur
9304000	Fifteenmile Creek Habitat Restoration Project	Adequate	1	Concur

d) Walla Walla River

The Walla Walla River drains 1,758 square miles in northeastern Oregon and southeastern Washington. Most of the land is privately owned and is extensively irrigated. In fact, irrigation is the largest use of ground water in the subbasin. Anadromous fish species receiving management focus are spring chinook and coho salmon and summer steelhead. Spring chinook and coho were extirpated and summer steelhead and bull trout populations are reduced in abundance. Irrigation is the most important factor limiting salmonid production in the basin. In addition, gravel mining, diking, forest management and grazing have also degraded habitat. The basin suffers from major fragmentation and poor connectivity of the remaining salmonid habitat.

The watershed assessment Project No. 9604601 should be completed first, before the other habitat work is implemented. Watershed assessment should guide the selection and prioritization of habitat restoration projects. (See Recommendation V-C.3.1 on page 93.)

CBFWA placed all four proposed habitat projects in Tier 1 and the ISRP concurred with that decision (Table 14).

Table 14. Comparative listing of the ISRP project evaluation, CBFWA priority, and the ISRP conclusions for the projects in the Walla Walla Subbasin.

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
COLUMBIA RIVER PLATEAU SUBREGION				
WALLA WALLA SUBBASIN				
9010	Assess Fish Habitat & Salmonids in Walla Walla Watershed in Washington	Adequate	1	Concur
9601100	Screens and Traps on the Walla Walla and Touchet	Adequate	1	Concur
9601200	Adult Fish Passage Improvement - Walla Walla River	Adequate	1	Concur
9604601	Walla Walla Basin Fish Habitat Enhancement	Adequate	1	Concur

e) Miscellaneous Projects

Within the Columbia Plateau Subregion, eight projects could not be assigned to a specific subbasin. Most were for wildlife mitigation. CBFWA placed all of these projects in Tier 1. ISRP concurred with three, found four proposals inadequate, and one law enforcement proposal was not reviewed (Table 15).

Table 15. Comparative listing of the ISRP project evaluation, CBFWA priority, and the ISRP conclusions for the projects in the Remaining Columbia Plateau Subregion.

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
COLUMBIA RIVER PLATEAU SUBREGION				
MAINSTEM SUBBASIN				
9092	Umatilla Tribal Fish and Wildlife Enforcement	Not Reviewed	1	Not Reviewed
9306600	Oregon Fish Screening Project FY99 Proposal	Adequate	1	Concur
9603201	Begin Implementation of Year 1 of the K Pool Master Plan Program	Inadequate	1	Inadequate Proposal
9009200	Wanaket Wildlife Mitigation Project	Adequate	1	Concur
9705911	Securing Wildlife Mitigation Sites-Oregon, Irrigon WMA Additions	Inadequate	1	Inadequate Proposal
9705915	Juniper Canyon and Columbia Gorge Wildlife Mitigation Project	Inadequate	1	Inadequate Proposal

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
WILLOW CREEK SUBBASIN				
9705904	Securing Wildlife Mitigation Sites-Oregon, Horn Butte	Inadequate	1	Inadequate Proposal
CRAB CREEK SUBBASIN				
9116	Rasor Ranch Acquisition/Crab Creek Watershed Restoration Project	Adequate	1	Concur

f. Mid-Columbia

The Mid-Columbia River tributaries include several major subbasins—Okanogan, Methow, Entiat, and Wenatchee—entering the Columbia River from the eastern slopes of the North Cascade Mountains in central Washington. Much of the drainage area in each subbasin is located on National Forest land or in designated wilderness areas, and all four subbasins have been identified as having relatively high quality aquatic habitats in their upper reaches by the USFS/BLM Interior Columbia Basin Ecosystem Assessment. The lower reaches of these systems have irrigation diversions and a variety of channel engineering projects designed to control flooding. Wildfires have burned substantial portions of the Mid-Columbia subbasins within the last 15 years, e.g., approximately three fourths of the Entiat watershed has been burned within the last decade. Dewatering, high summer temperatures, sedimentation, streambank armoring, grazing, channel dredging (mining), and loss of channel structure (large woody debris) have all been identified as factors contributing to habitat loss.

Coho salmon were extirpated from Mid-Columbia River tributaries early in the twentieth century due to dam construction and operation. In addition, low flows and high temperatures created by large irrigation withdrawals in the lower reaches of the rivers and their principal tributaries also contributed to the loss of coho salmon. At present there is a widespread effort to re-establish naturally spawning coho salmon runs in the Mid-Columbia.

Sockeye salmon were originally present in eight tributary-lake systems of the Mid- and Upper Columbia, but runs are now limited to the Okanogan and Wenatchee River systems. Both tributaries contain naturally spawning and artificially propagated fish. Overall, sockeye salmon are currently the most abundant anadromous salmonid species in the Mid-Columbia.

Spring and summer chinook salmon have declined relative to historical levels, and there is a strong effort to rebuild runs using hatchery propagation and supplementation. In some tributaries, however, there are still populations of naturally spawning spring and summer chinook salmon but the numbers of naturally spawning adults in some subbasins (e.g., Methow and Entiat) are perilously low.

Summer steelhead are the other anadromous salmonid species found in the Mid-Columbia. Like the other species, steelhead have suffered from habitat loss and mainstem passage problems, and populations are depressed. All subbasins are managed for both natural and hatchery production. In the Methow and Entiat Rivers, which have no sockeye salmon runs, summer steelhead are the most abundant anadromous salmonid.

All Mid-Columbia subbasins have populations of bull trout and westslope cutthroat trout in cold headwater streams and lakes. Some of the healthiest populations of these two species in the Cascade Mountains occur in these drainages. Pacific lamprey are known to occur in the lower reaches of the rivers, but populations are believed to be depressed.

In an area like the Mid-Columbia where there is habitat fragmentation, it is critical that restoration projects be guided by the results of a watershed assessment. The ISRP was encouraged to note watershed assessments are part of some of the proposed habitat projects in the basin. However, a significant amount of proposed habitat work does not appear to be guided by or related to a watershed assessment. More effort needs to be allotted to watershed assessment and the integration of all habitat efforts by all agencies and institutions. (See Recommendation V-C.3.1, page 93.)

CBFWA did not place a high priority on projects proposed for the Mid-Columbia subregion (Figure 2). Fifteen of the eighteen proposed projects were assigned to Tier 2 or 3. CBFWA assigned three projects to Tier 1. The ISRP concurred with two of those and deferred on the other. CBFWA assigned 13 projects to Tier 2. ISRP concurred with seven, four were inadequate proposals and two were deemed to be a high priority.

Project 9086 will help complete the need for a comprehensive watershed assessment in the Methow River system (which still contains some excellent habitat), and Project 9050 will provide access to a large number of stream reaches now blocked by impassable road crossings and improve streamside shade and cover in Chumstick Creek. Both projects will benefit naturally-spawning fishes in these drainages.

V-B.2.f.1

The ISRP recommends that Project Nos. 9086 (Coordinate Assessment and Prioritization of Key Habitats in Methow Basin) and 9050 (Remove 23 Migrational Barriers and Restore Riparian Vegetation on Chumstick Creek) be funded in FY 99.

Two projects in Tier 3 received moderate support from the ISRP (Table 16).

Table 16. Comparative listing of the ISRP project evaluation, CBFWA priority, and the ISRP conclusions for the projects in the Mid-Columbia Subregion.

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
MID-COLUMBIA SUBREGION				
WENATHCEE SUBBASIN				
9044	Replace Chumstick Creek Culvert	Adequate	1	Concur
9050	Remove 23 Migrational Barriers and Restore Riparian Vegetation on Chumstick	Adequate	2	Recommend
9054	Reduce Erosion, Identify Access and Improve... at Bonn. Power Line Corridor	Adequate	3	Moderate Support
ENTIAT SUBBASIN				
9031	Implement Entiat Model Watershed Plan	Inadequate, Adequate Purpose	2	Inadequate Proposal
METHOW SUBBASIN				
9015	Enhance and Protect Fisheries in the Wolf Creek Watershed	Adequate	2	Concur
9024	Methow Tributaries Fish Passage	Adequate	2	Concur
9025	Prevent Mortality in Methow Endangered and Proposed Fish	Inadequate	2	Inadequate Proposal
9026	Expand Respect the River	Adequate	2	Concur
9027	Prevent Pollution of Methow River	Inadequate	2	Inadequate Proposal
9028	Reduce Sediment in Frazer Creek, Beaver Creek, Methow River	Inadequate	2	Inadequate Proposal

9039	Increase Stream Flow in the Methow River and Provide Trail-Based Recreation	Adequate	2	Concur
9086	Coordinate Assessment and Prioritization of Key Habitats in Methow Basin	Adequate	2	Recommend
9097	Methow Basin Side Channel Habitat Construction	Adequate	2	Concur
9155	Establish the Methow Watershed Council	Adequate	2	Concur
9604000	Evaluate the Feasibility and Risks of Coho Reintroduction in Mid-Columbia .	Inadequate	1	Defer
9046	Identify Res Fish & Macroinvertebrate Taxa & Function in Anad Fish Habitat	Adequate	3	Moderate Support
OKANOGAN SUBBASIN				
9017	Improve Anadromous Fish Habitat and Passage in Omak Creek	Adequate	2	Concur
9604200	Restore and Enhance Anadromous Fisheries and Habitat in Salmon Creek	Adequate	1	Concur

g. Upper Columbia

The upper Columbia subregion includes the Columbia River and its tributaries from Chief Joseph Dam to the headwaters within the United States. It covers roughly 43,000 square miles and includes the upper Columbia mainstem, Coeur d'Alene, Kootenai, Pend Oreille, Clark Fork, Flathead, Bitterroot, and Blackfoot subbasins. Chief Joseph and Grand Coulee Dams completely blocked anadromous fish migrations to the upper Columbia, which previously included a diversity of anadromous and resident fish populations, including eleven salmonid stocks. Both mitigation and substitution have been implemented in the subregional resident fish program. The wildlife mitigation goals are to fully mitigate for construction and mitigation losses of 149,276 habitat units, 111,785 of which are associated with the Grand Coulee hydroproject. Riparian/river, shrub-steppe, and wetlands habitats are assigned priority for mitigation.

Upper Columbia Mainstem. This subbasin includes waters within the Colville and Spokane Indian Reservations and the State of Washington. The complete extirpation of anadromous fishes from this area reduced native salmonids by an estimated 64%. Resident fishes have been affected by habitat alteration and degradation from hydroprojects and from other land uses such as agriculture, grazing, and logging. The current salmonids within the subbasin are all resident fishes, and there are few native species assemblages. Target resident fish for mitigation and management include bull trout, burbot, kokanee, rainbow trout (redband and adfluvial),

westslope cutthroat, and white sturgeon. Many non-native fishes are present in the basin, including lahontan cutthroat, brook trout, kokanee, rainbow trout, walleye, yellow perch, and smallmouth bass. The management goal for the subregion is to provide successful tribal subsistence fisheries and recreational sport fisheries, consistent with the FWP goal of "a healthy Columbia River Basin ecosystem, one that supports both human settlement and the long-term sustainability of native fish and wildlife species in native habitats where possible..."

Pend Oreille Subbasin. This subbasin includes a number of natural lakes and reservoir lakes. Native resident fish are targeted as the management priority, given that habitat conditions can be adequately maintained to support them. Where habitat seems unsuitable for native fishes, other ways of maximizing harvest have been given priority. Hydroprojects have adversely affected fishes both by forming barriers to movement and by large alterations of habitat. Operation of the Albeni Falls Dam has adversely affected Lake Pend Oreille, causing losses of shoreline spawning areas, aquatic plant production, and fish habitat. Cabinet Gorge Dam and Box Canyon Dams also have caused loss of suitable fish habitat and produced slower-flowing, warmwater environments. Both native populations and important sports fisheries have been damaged. Management techniques intended to be used to mitigate for fish losses include ecosystem improvement, changing dam operations, recovering native fish communities, and improving sport fisheries.

Coeur d'Alene Subbasin. This subbasin contained an important westslope cutthroat trout fishery prior to hydropower development, but the cutthroat population has declined significantly since 1932. In addition to dam construction and operation, logging, urbanization, mining, and exotic species introductions have dramatically altered the subbasin's stream ecosystems. The subbasin goals include rehabilitation and maintenance of riparian corridors, reestablishment and protection of self-sustaining populations of native cutthroat and bull trout, and habitat restoration.

Twenty-two proposals were submitted for funding from the upper Columbia region. Fifteen were for the resident fish program and seven for the wildlife program. The majority of the proposals were for work in the upper Columbia mainstem subbasin, with only two proposals for the Coeur d'Alene subbasin (one resident fish hatchery proposal and one wildlife habitat acquisition proposal) and four from the Pend Oreille subbasin (three resident fish proposals [including one hatchery proposal and one watershed project] and one wildlife proposal). CBFWA assigned 21 of the upper Columbia proposals to Tier 1 and 1 (for study of white sturgeon) to Tier 2. Less than half of the proposals were judged as scientifically adequate by the ISRP; 8 were rated as adequate, 9 as inadequate, and 6 as inadequate

proposal but adequate purpose. Almost half of the proposals (10 of the 22) were for hatchery projects; CBFWA recommended funding for all of these, and ISRP assigned them to deferred status. CBFWA recommended funding for 4 of the 5 non-hatchery resident fish proposals. ISRP concurred with 2, but found 2 Tier 1 proposals and the Tier 2 proposal to be inadequate. CBFWA assigned all 7 wildlife proposals to Tier 1; ISRP concurred with 5 of these, but found 2 to be inadequate proposals (Table 17). The ISRP concluded that its recommendation on the hatchery proposals should be deferred pending completion of the comprehensive review of the hatchery program. Many of the hatchery and hatchery-related projects from the Upper Columbia involve introduction of non-native stocks, which generates potential conflict with recovery programs for native fishes. Additionally, some hatchery proposals lacked the technical detail needed for adequate scientific review.

Table 17. Comparative listing of the ISRP project evaluation, CBFWA priority, and the ISRP conclusions for the projects in the Upper Columbia Subregion.

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
UPPER COLUMBIA SUBREGION				
UPPER COLUMBIA MAINSTEM & MOSES LAKE SUBBASIN				
Lake Roosevelt Artificial Production Proposals				
9094	Produce Kokanee Salmon in Net Pens for Release into Lake Roosevelt	Inadequate	1	Defer
9501100	Chief Joseph Kokanee Enhancement Project	Inadequate	1	Defer
8503800	Colville Hatchery	Inadequate	1	Defer
9104600	Spokane Tribal (Galbraith Springs) Hatchery O&M	Inadequate	1	Defer
9104700	Sherman Creek Hatchery O&M	Inadequate	1	Defer
9404300	Monitor, Evaluate, and Research the Lake Roosevelt Fishery	Inadequate	1	Defer
9500900	Volunteers Rear 500,000 Net Pen Rainbow Trout Above Grand Coulee Dam	Inadequate	1	Defer
Other Upper Columbia Mainstem Proposals				
9001800	Evaluate Rainbow Trout Habitat/Passage Improvements of Tribs. To L. Roosev	Adequate	1	Concur
9502700	Assess Limiting Factors of the Lake Roosevelt White Sturgeon Population	Inadequate, Adequate Purpose	2	Inadequate Proposal
9502800	Restore Moses Lake Recreational Fishery	Inadequate	1	Defer

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
9700400	Resident Fish Stock Status Above Chief Joseph and Grand Coulee Dams	Inadequate, Adequate Purpose	1	Inadequate Proposal
9013	Hellsgate Big Game Winter Range Continuing Acquisition	Adequate	1	Concur
9204800	Hellsgate Big Game Winter Range	Adequate	1	Concur
9206100	Albeni Falls Wildlife Mitigation Project	Adequate	1	Concur
9506700	Coville Confederated Tribes Performance Contract (Credits For Habitat)	Inadequate	1	Inadequate Proposal
9800300	O & M Funding of Wildlife Habitat on STOI Reservation for Grand Coulee Dam	Adequate	1	Concur
PEND OREILLE SUBBASIN				
9404700	Lake Pend Oreille Fishery Recovery Project	Adequate	1	Concur
9500100	Kalispel Tribe Resident Fish	Inadequate	1	Defer
9700300	Box Canyon Watershed Project	Inadequate, Adequate Purpose	1	Inadequate Proposal
9106000	Kalispel Pend Oreille Wetlands Wildlife Mitigation Project	Inadequate, Adequate Purpose	1	Inadequate Proposal
COEUR D'ALENE SUBBASIN				
9004400	Implement Fisheries Enhancement Opportunities: Coeur d'Alene Reservation	Inadequate	1	Defer
9004401	Lake Creek Land Acquisition and Enhancement	Adequate	1	Concur

h. Columbia Headwaters

The ISRP evaluated projects in the Kootenai and Flathead subbasins together because of the similarity of their environments and fish and wildlife problems. Both subbasins lie in the upper reaches of the Columbia River basin before the river turns north and enters British Columbia. They are upstream of the anadromous fish barrier at Chief Joseph Dam and thus fisheries issues revolve around native and non-native resident species. Each subbasin has been strongly affected by construction of a headwater storage reservoir. The FWP currently funds 14 projects largely for mitigation related to construction and operation of the storage reservoirs. These projects are all proposed to continue. There were new proposals for basic research on the effects of food web changes on native fish restoration

strategies, public education, and the purchase of a large conservation easement for wildlife.

Kootenai Subbasin. The Kootenai River loops south into extreme northwestern Montana and the northeastern Idaho panhandle from origins along the west side of the Rocky Mountains of British Columbia. It joins the Columbia River in southern British Columbia. Construction of Libby Dam in 1972 near the southernmost point of the loop inundated 109 miles of mainstem Kootenai River and 40 miles of low-gradient tributary habitat. The dam created three isolated segments of river for resident and locally migratory species: the upper Kootenai upstream of Libby Reservoir (Lake Koocanusa), the middle Kootenai between Libby Dam and Kootenai Falls (a natural barrier), and the lower Kootenai below Kootenai Falls to Kootenay Lake, British Columbia. Operation of Libby Dam changed the seasonal hydrograph, water temperatures, and nutrient cycling, all with important consequences for aquatic life of the river downstream.

Fish stocks of the Kootenai drainage are in decline, especially since construction of Libby Dam. The drainage has experienced severe declines in the range and number of four of five native salmonid species (bull trout, westslope cutthroat trout, interior rainbow trout (redband), and mountain whitefish), while the status of a fifth salmonid, the pigmy whitefish, is uncertain. Two trout have been petitioned for ESA listing (bull trout, inland redband trout) and a petition for a third is expected (westslope cutthroat trout). Native white sturgeon is currently listed under ESA provisions. Native burbot (ling cod) began a decline in the 1960s, and persists only in isolated populations in the middle and lower Kootenai. All species were cited as important resident fish species in the 1994 FWP.

The subbasin goal for the Kootenai drainage is to mitigate for resident fish losses caused by construction and operation of Libby Dam by improving the ecosystem and recovering the fish community to self-sustaining levels. Specific strategies and actions adopted by fish managers are listed in the CBFWA FY 99 Draft Annual Implementation Plan (Vol. 1, p 136), and include learning about conditions of existing stocks, maintaining and enhancing fish production, adjusting flows to support spawning, maintaining genetic diversity and adaptiveness, protecting and enhancing habitat, re-establishing populations where appropriate, creating harvest opportunities, and managing angling demand. A Libby Dam mitigation plan for the Kootenai basin comparable to that for the Flathead (below) is in preparation.

The projects proposed generally are responsive to these strategies, which are, in turn, in conformity with the general goals of the FWP. However, the overall subbasin strategic plan has not been completed.

Flathead Subbasin. The Flathead River originates in the mountains of Northwest Montana (an upper tip of the North Fork originates in British Columbia) where tributaries flow southeast or northwest in intermountain valleys to join Flathead Lake—lake elevation is now regulated by Kerr Dam. The Flathead River continues generally southwest downstream of the lake, collecting tributaries from the basin south of the lake and emptying into the Clark Fork River. The Clark Fork River continues west into Pend Oreille Lake and River and into the Columbia River in the headwaters of Lake Roosevelt (Grand Coulee Dam). Hungry Horse Dam was completed in 1952 on the South Fork upstream of Flathead Lake, inundating 77 miles of river. It blocked access to 363 miles of tributary reaches and 85 miles of the South Fork, effectively eliminating 40% of the spawning and rearing habitat for bull trout and westslope cutthroat trout migrating from Flathead Lake. Flow patterns, thermal regimes, and nutrient cycling downstream of the dam have been greatly altered with detrimental effects to the riverine environment and Flathead Lake. Tributary access in the subbasin is also blocked by a variety of man-made and natural barriers.

Biological productivity in the subbasin has been reduced by a combination of reduced access to spawning and rearing habitat above Hungry Horse Dam; altered (unsteady and unnatural) flow, temperature, and nutrient conditions; inappropriate species introductions (especially to Flathead Lake); and encroachments of forestry, agriculture, and urbanization. Annual reservoir drawdowns for flow enhancement downstream reduce the productivity of the reservoir. Native bull trout and westslope cutthroat trout are of special concern throughout the subbasin, as is kokanee in Flathead Lake.

Mitigation activities are strategically planned. In 1991, a fisheries mitigation plan for Hungry Horse Dam was prepared by the Montana Fish Wildlife, and Parks and the Confederated Salish and Kootenai Tribes. This plan documented fisheries and habitat losses and a flexible strategy for mitigation in accordance with measures identified in the 1987 FWP. An implementation plan was adopted in 1993 and the plans were updated in 1997. These plans form the framework for watershed restoration efforts. The overall goal is to mitigate for resident fish losses caused by construction and operation of Hungry Horse Dam and the federal hydropower system and improve sport fishing opportunities as compensation. A system-wide approach is taken with key features being habitat improvement, maintenance of wild stocks (particularly native westslope cutthroat and bull trout), maintenance of instream flows and the use of Integrated Rule Curves for Hungry Horse, and general restoration of normative conditions.

Since mitigation began in 1992, habitat restoration projects have been implemented (some completed) in the upper Flathead watershed. Kokanee reintroduction to Flathead Lake was unsuccessful. The projects currently proposed generally are responsive to the subbasin mitigation plans, which are, in turn, in conformity with the general goals of the FWP.

A favorable feature of this set of proposals is the way that most of these projects interrelate. The proposals generally do a good job of telling about the relationships among projects. However, some projects seem artificially separated. There may be value in some consolidation. On the other hand, funding may be better directed to the separate entities for administrative/social reasons, even though the work is done cooperatively. There seems to be good basinwide planning for dam mitigation. This seems especially true for the Flathead subbasin.

CBFWA placed 14 projects in Tier 1. The ISRP concurred with 8, deferred 4 and found 2 inadequate. Two of the Tier 3 projects were given moderate support by ISRP. One project was not reviewed (Table 18). We declined to review Proposal No. 9111 because it was submitted by a former ISRP member. That proposal was evaluated by the two outside reviewers who found it adequate and viewed it favorable (Appendix A).

Table 18. Comparative listing of the ISRP project evaluation, CBFWA priority, and the ISRP conclusions for the projects in the Columbia Headwaters Subregion.

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
COLUMBIA HEADWATERS SUBREGION				
FLATHEAD SUBBASIN				
9111	Evaluate Effects of Food Web Changes on Native Fish Restoration Strategies	Not Reviewed	3	Not Reviewed
8346500	Libby and Hungry Horse Modeling Technical Analysis	Adequate	1	Concur
9101901	Hungry Horse Fisheries Mitigation Plan Flathead Lake	Adequate	1	Concur
9101903	Hungry Horse Dam Mitigation - Watershed Restoration and Monitoring	Adequate	1	Concur
9101904	Hungry Horse Mitigation - Hatchery-Based Impl. of Native Fish Recovery	Inadequate	1	Defer
9401001	Mitigation for Excessive Drawdowns at Hungry Horse & Libby Reservoirs - Lib	Adequate	1	Concur
9502500	Flathead River Instream Flow Project	Adequate	1	Concur
9608701	Focus Watershed Coordination-Flathead River Watershed	Inadequate, Adequate Purpose	1	Inadequate Proposal

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
KOOTENAI SUBBASIN				
9041	Enhance/Protect Imperiled Native Fish Species Through Improved Education...	Adequate	3	Moderate Support
9124	Purchase Conservation Easement from Plum Creek Timber	Adequate	3	Moderate Support
8346700	Mitigation for the Construction and Operation of Libby Dam	Adequate	1	Concur
8806400	Kootenai River White Sturgeon Studies and Conservation Aquaculture	Adequate	1	Defer
8806500	Kootenai River Fisheries Investigations	Adequate	1	Defer
9401002	Mitigation for Excessive Drawdowns: Hungry Horse Component	Adequate	1	Concur
9401200	Kootenai River Fisheries Investigation M&E Supplemental Budget	Inadequate	1	Defer
9404900	Improve the Kootenai River Ecosystem	Adequate	1	Concur
9608720	Focus Watershed Coordination-Kootenai River Watershed	Inadequate, Adequate Purpose	1	Inadequate Proposal

i. Lower Snake

The Lower Snake region covers approximately 35,200 square miles including approximately 250 miles of the mainstem Snake River from its confluence with the Columbia River upstream to Hells Canyon Dam, where anadromous fish passage is blocked. Four federal dams in the mainstem of the Lower Snake River—Ice Harbor, Lower Monumental, Little Goose, and Lower Granite—have a major impact on anadromous fish production in the Lower Snake subregion. Several major streams are tributaries to the lower Snake River including the Tucannon, Grande Ronde, Imnaha, Salmon and Clearwater rivers. In the ISRP review, the Tucannon River was included in the Columbia Plateau subregion.

1) Grande Ronde River

The Grande Ronde subbasin, located primarily in northeast Oregon, covers 3,950 square miles and includes approximately equal portions of federal (USFS) and private lands. The privately owned land includes thousands of acres of irrigated cropland, while the Forest Service lands are managed for timber, grazing and recreation.

Primary constraints on salmonid production in the Grande Ronde subbasin are related to water quality and quantity and sedimentation. In the lower portion of the subbasin and the tributary creeks, low flows, elevated temperatures and pollutants result in poor conditions for juvenile rearing

and migration. Adult spawning areas are impacted by these same factors and sedimentation. In addition, riparian degradation and channelization have resulted in habitat fragmentation.

Extant species targeted for management include fall and spring chinook salmon, and summer steelhead, along with reintroduction plans for extirpated coho salmon and sockeye salmon.

Management actions in the subbasin include habitat restoration and a broad range of artificial production activities including both captive and conventional broodstock techniques.

2) Imnaha River

The Imnaha subbasin (980 square miles) lies in the northeast corner of Oregon, where it flows 63 miles north to join the Snake River. Most (75%) of the subbasin lies within the Wallowa Whitman National Forest and much of the subbasin is considered remote and inaccessible. Private land lower in the subbasin is used primarily for grazing and hay production.

Water quality and quantity in the subbasin are generally considered sufficient for anadromous fish production. The subbasin has been impacted by moderate levels of logging, road-building, mining, farming, ranching and livestock practices, although the impacts are not thought to be major limiting factors on fish production.

Extant species targeted for management include fall and spring chinook salmon, and summer steelhead, along with reintroduction plans for extirpated coho salmon and sockeye salmon.

Management actions in the subbasin focus on coordination of habitat enhancement efforts, habitat restoration, and supplementation actions implemented with Lower Snake River Compensation Program funds through the Lookingglass Hatchery and satellite facilities. Funds from the Northeast Oregon Hatchery (Project Nos. 8805301 and 8805305) are used to coordinate and plan future hatchery activities.

In the Grande Ronde and Imnaha subbasins, 21 projects were submitted for review and funding consideration. Of these, 10 proposals dealt with habitat, water quality, and watershed issues, 7 dealt with artificial production projects, one dealt with assessing Imnaha River smolt outmigration, and 4 dealt with wildlife mitigation projects (Table 19).

In the Grande Ronde subbasin, the emphasis on water quality, habitat and riparian restoration, as well as watershed level coordination seemed appropriate for addressing the recognized primary constraints on salmonid production. Of the seven artificial production proposals, only two were judged as adequate by the ISRP, in its initial review. Conclusions on the entire set of seven hatchery projects was deferred until the comprehensive review is completed. We were less certain that the artificial production projects appropriately addressed production concerns in the Grande Ronde subbasin, as the set included projects ranging from captive broodstock and supplementation techniques to conventional harvest augmentation production. There may be inherent ecological incompatibilities between these two approaches that could undermine the success of the captive broodstock and supplementation restoration efforts. For example, releases of large numbers of juveniles from the harvest augmentation program could compete with juveniles from the supplementation program. If carrying capacity is exceeded, survival of both groups could be negatively impacted. Similarly, if juveniles from the harvest augmentation program return as adults and are not harvested, they could interbreed with wild fish or with the naturalized returning adults from the supplementation program. Interbreeding between the two groups would be expected to lower the fitness of the wild or naturalized group.

Table 19. Comparative listing of the ISRP project evaluation, CBFWA priority, and the ISRP conclusions for the projects in the Grande Ronde and Imnaha Subbasins.

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
LOWER SNAKE SUBREGION				
GRANDE RONDE AND IMNAHA SUBBASINS				
NEOH Grande Ronde Proposals				
8805301	Northeast Oregon Hatchery Master Plan	Inadequate	1	Defer
8805302	Plan, Site, Design & Construct NEOH Hatchery-Umatilla/Walla Walla Component	Inadequate	1	Defer
8805305	NE Oregon Hatchery Master Plan and Facilities - ODFW	Inadequate	1	Defer
9800702	Grande Ronde Supplementation - O&M/M&E - Nez Perce Tribe Lostine	Inadequate	1	Defer
9800703	Conduct Satellite Facility O&M and Program M&E for Grande Ronde Spr Chinook	Inadequate	1	Defer
Grande Ronde Captive Broodstock Proposals				
9801001	Grande Ronde Basin Spring Chinook Captive Broodstock Program	Adequate	1	Defer
9801006	Captive Broodstock Artificial	Adequate	1	Defer

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
	Propagation			
Other Grande Ronde Production and Habitat Proposals				
8712703	Imnaha River Smolt Monitoring Program Project	Adequate	1	Concur
9202601	Grande Ronde Model Watershed - Project Planning Support	Adequate	1	Concur
9402700	Grande Ronde Model Watershed Habitat Projects	Adequate	1	Concur
9403900	Wallowa Basin Project Planning	Adequate	1	Concur
9702500	Implement the Wallowa County/Nez Perce Tribe Salmon Recovery Plan	Adequate	1	Concur
9029	Monitoring Water Quality With Data Collection Platforms	Inadequate	3	Concur
9085	Propagate Native Plant Species for Revegetation & Riparian Restoration Proj	Adequate	3	Moderate Support
9119	Public-Private Cooperative Resource Mgmt in Lower Joseph Cr Watershed	Adequate	3	Moderate Support
8402500	Protect and Enhance Fish Habitat in Grande Ronde Basin Streams	Adequate	1	Concur
9608300	Upper Grande Ronde Habitat Enhancement	Inadequate, Adequate Purpose	*1*	Inadequate Proposal
9096	Northeast Oregon Wildlife Mitigation O&M Trust Fund	Adequate	2	Concur
9608000	Northeast Oregon Wildlife Mitigation Project	Adequate	1	Concur
9705905	Securing Wildlife Mitigation Sites-Oregon, Ladd Marsh WMA Additions	Adequate	1	Concur
9705912	Securing Wildlife Mitigation Sites-Oregon, Wenaha WMA Additions	Adequate	1	Concur

3) Salmon River

The Salmon River subbasin in central Idaho covers more than 14,000 square miles and is the second largest subbasin in the Columbia River after the Snake River subbasin. The Salmon subbasin contains the largest tract of wilderness in the lower 48 states. Nearly 80% of the subbasin is managed by the USFS and 8% is privately held. Major land uses in the subbasin are forestry, recreation, wilderness, mining, agriculture, and grazing.

Primary constraints on salmonid production in the Salmon subbasin are related to habitat degradation and fragmentation resulting from mining and grazing activities. Irrigation diversions in the lower mainstems of tributaries, such as the Lemhi, Pashimeroi, East Fork and Little Salmon,

result in dewatered habitat and increased water temperatures. Additionally, these problems have disconnected the once productive tributaries from the mainstem Salmon River. The diversions also act as impediments to adult migration and are sources of juvenile mortality.

Species targeted for management include fall, spring, and summer chinook salmon, summer steelhead (Group A and Group B) and sockeye salmon. Reintroduction efforts are underway for the extirpated coho salmon.

Management actions in the subbasin focus on improving habitat and riparian areas, improving juvenile and adult passage at irrigation diversions, and various artificial production strategies, including supplementation and captive broodstock techniques, as well as conventional hatchery releases for harvest opportunities.

In the Salmon River subbasin, 33 projects were submitted for review and funding consideration. Of these, 10 proposals dealt with habitat, water quality, and watershed issues, 3 with irrigation diversion screenings, 7 with genetic and life history assessments of remaining anadromous and resident stocks, 1 with the feasibility of sockeye salmon reintroduction to Wallowa and Warm lakes, and 12 with artificial production projects (Table 20).

The emphasis on water quality, habitat restoration and sediment reduction projects, as well as additional irrigation diversion screening and adult passage improvements seemed appropriate for addressing the recognized primary constraints on salmonid production in the Salmon river subbasin. We were encouraged to see proposals directed at assessments of life history and genetic attributes of resident and anadromous stocks, although only about half of the seven proposals in this group were deemed adequate by the ISRP.

Of the 12 artificial production proposals (2 conventional hatchery production, 5 captive broodstock, and 5 supplementation), roughly half were judged as adequate by the ISRP in its initial review. The entire set of twelve proposals was placed in the deferred category until the comprehensive review is completed. With Salmon River subbasin anadromous salmonid stocks at record low levels of abundance, the attraction of artificial propagation is understandable. However, the ISRP was concerned about the inadequacy of many of the artificial production proposals, and what appears to be a lack of a coordinated and integrated approach to the use of artificial production in the Salmon River subbasin. This was particularly apparent for the set of linked supplementation proposals. The proposals did not adequately describe methods or

experimental designs and progress to date (8 years) was not adequately summarized.

Table 20. Comparative listing of the ISRP project evaluation, CBFWA priority, and the ISRP conclusions for the projects in the Salmon Subbasin.

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
LOWER SNAKE SUBREGION				
SALMON RIVER SUBBASIN				
Chinook and Steelhead Natural Production and Supplementation Research				
9064	Analyze the Persistence and Spatial Dynamics of Snake River Chinook Salmon	Adequate	1	Concur
9151	Assess Adult Steelhead Escapement in the Secesh River System	Adequate	2	Concur
8909600	Monitor, Evaluate Genetic Characteristics of Supplemented Salmon & Steelhead	Adequate	1	Defer
8909800	Salmon Supplementation Studies in Idaho Rivers	Inadequate, Adequate Purpose	1	Defer
8909801	Salmon Supplementation Studies in Idaho Rivers	Inadequate, Adequate Purpose	1	Defer
8909802	Salmon Supplementation Studies in Idaho Rivers	Inadequate, Adequate Purpose	1	Defer
8909803	Salmon Supplementation Studies in Idaho Rivers	Inadequate, Adequate Purpose	1	Defer
9005500	Steelhead Supplementation Studies in Idaho Rivers	Adequate	1	Defer
9107300	Idaho Natural Production Monitoring and Evaluation Program (INPMEP)	Inadequate, Adequate Purpose	1	Inadequate Proposal
9703000	Monitor Listed Stock Adult Chinook Salmon Escapement	Adequate	1	Concur
Snake River Chinook Recovery Projects: Artificial Propagation, Captive Rearing and Captive Broodstock Proposals				
9604300	Johnson Creek Artificial Propagation Enhancement - O&M and M&E	Adequate	1	Defer
9606700	Manchester Spring Chinook Broodstock Project	Adequate	1	Defer
9703800	Listed Stock Chinook Salmon Gamete Preservation	Adequate	1	Concur
9700100	Captive Rearing Initiative for Salmon	Adequate	1	Defer

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
	River Chinook Salmon			
9801002	Captive Rearing Initiative for Salmon River Chinook Salmon - M & E	Adequate	1	Defer
Redfish Lake Sockeye Salmon Captive Broodstock and Snake River Sockeye Research Proposals				
9107200	Redfish Lake Sockeye Salmon Captive Broodstock Program	Adequate	1	Concur
9204000	Redfish Lake Sockeye Salmon Captive Broodstock Rearing and Research	Adequate	1	Concur
9009300	Life History and Genetic Analysis of Oncorhynchus nerka	Adequate	1	Concur
9107100	Snake River Sockeye Salmon Habitat and Limnological Research	Inadequate	1	Inadequate Proposal
Salmon River Production Proposal				
9705700	Salmon River Production Program	Inadequate	1	Defer
Salmon River Subbasin Habitat Proposals				
9009	Restore Salmon River (Challis, ID) Area to Healthy Condition	Adequate	1	Concur
9014	Restore Habitat within Dredge Tailings on the Yankee Fork Salmon River	Adequate	2	Concur
9034	Reduce Sediment Delivery From Kline Mountain Road to the S.F. Salmon River.	Inadequate	3	Concur
9051	Stabilize Blowout Creek (South Fork of Meadow Creek)	Inadequate	3	Concur
9121	Assessment Salmon River Subbasin	Inadequate	2	Inadequate Proposal
9152	Feasibility of Sockeye Reintroduction to Wallowa and Warm Lakes	Inadequate, Adequate Purpose	3	Concur
9202603	Idaho Model Watersheds Admin./Impl. Support	Adequate	1	Concur
9401700	Idaho Model Watershed Habitat Projects	Adequate	1	Concur
9306200	Salmon River Anadromous Fish Passage Enhancement	Inadequate, Adequate Purpose	1	Inadequate Proposal
9401500	Idaho Fish Screening Improvement - O&M	Adequate	1	Concur
9405000	Salmon River Habitat Enhancement	Adequate	1	Concur
9600700	Irrigation Diversion Consolidations & Water Conservation, Up. Salmon R., ID	Adequate	1	Concur
9043	Introducing Systems Science to Planning and Implementing F&W Recovery	Inadequate	3	Concur

4) Clearwater River

The Clearwater subbasin in north-central Idaho covers 9,645 square miles and provides approximately one-third of the Snake River streamflow. Dams presently and historically have limited salmonid production in the subbasin. Dworshak Dam blocks anadromous fish access to the North Fork of the Clearwater River. The federal government owns about 61% of the subbasin, while another 32% is privately held. Approximately 85% of the subbasin is coniferous forest, while the remainder is rolling high prairie. Most of the federal land is administered by the USFS.

Constraints on salmonid production in the Clearwater subbasin are primarily related to sedimentation, lack of large woody debris, and a decrease in the number and size of pools, which are thought to reduce water quality, reduce adult pre-spawning survival and reduce juvenile over-winter survival. In total, these problems also result in habitat fragmentation.

Species targeted for management include fall, spring, and summer chinook salmon, and Group A and Group B steelhead. Reintroduction plans for the extirpated coho salmon have been initiated. Additionally, native resident species including bull trout and westslope cutthroat trout are targeted for management.

Management actions in the subbasin include a suite of habitat restoration projects and a larger suite of artificial production activities ranging from conventional hatchery programs to supplementation and captive broodstock techniques.

In the Clearwater River subbasin, 24 projects (including a habitat project in the Potlatch subbasin) were submitted for review. The projects included 15 dealing with habitat issues, 3 with artificial production, 4 with status assessment of anadromous and resident species and 2 with the impacts of Dworshak Dam hydro operations on the local fisheries. The mix of projects submitted for funding in the Clearwater subbasin is appropriate for addressing the identified production constraints. However, the ISRP deferred any conclusion on the hatchery projects until the comprehensive review has been completed. The ISRP judged 10 of the 24 proposals submitted for review as adequate. These included 7 habitat related projects, 2 assessment proposals (bull trout and Pacific lamprey), and 1 proposal to examine the impacts of Dworshak Dam on fisheries (Table 21). In general, proposals judged as inadequate lacked sufficient detail on their methods and design. They frequently also lacked explicit links to the FWP and the salmon rebuilding goals. In the case of the Nez Perce Hatchery proposal (9093), the proposal relied on references to extensive past studies

and well-qualified personnel, but failed to adequately summarize findings from the studies.

Table 21. Comparative listing of the ISRP project evaluation, CBFWA priority, and the ISRP conclusions for the projects in the Clearwater Subbasin.

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
LOWER SNAKE SUBREGION				
CLEARWATER SUBBASIN				
Clearwater Anadromous Hatchery Proposals				
8335000	Nez Perce Tribal Hatchery	Inadequate	1	Defer
Clearwater Habitat and Anadromous Research Proposals				
9011	Characterize & Quantify Residual Steelhead in Clearwater River, Idaho	Inadequate	1	Inadequate Proposal
9082	Evaluate Feed Strategies to Reduce Residualism & Promote Smolting in Steelhead	Inadequate	2	Inadequate Proposal
9057	Evaluate Status of Pacific Lamprey in the Clearwater River Drainage, Idaho	Adequate	1	Concur
9059	Restore Anadromous Fish Habitat in the Little Canyon Creek Subwatershed	Inadequate, Adequate Purpose	1	Inadequate Proposal
9060	Restore Anadromous Fish Habitat in the Nichols Canyon Subwatershed	Adequate	1	Defer
9118	Restore West Fork Little Bear Creek For Steelhead	Inadequate	3	Concur
9120	Protecting and Restoring Big Canyon Creek Watershed	Inadequate	1	Inadequate Proposal
9122	Rehabilitate Lapwai Creek	Inadequate	1	Inadequate Proposal
9163	West Fork Squaw Creek Fish Passage Project	Adequate	2	Concur
9303501	Enhance Fish, Riparian and Wildlife Habitat within the Red River Watershed	Adequate	1	Concur
9607702	Protecting and Restoring the Lolo Creek Watershed	Adequate	1	Concur
9607706	Restore Lolo Watershed	Adequate	2	Concur
9607703	Protecting and Restoring the Squaw and Papoose Creek Watersheds	Adequate	1	Concur
9607707	Restore Squaw and Papoose Watersheds	Adequate	2	Concur
9607704	Final Design for Fish Passage Improvements at Lower Eldorado Falls	Inadequate	1	Inadequate Proposal
9607705	Restore Mccomas Meadows	Inadequate	1	Inadequate Proposal
9608600	Clearwater Subbasin Focus Watershed Program	Inadequate	1	Inadequate Proposal

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
9706000	Clearwater Subbasin Focus Watershed Program	Inadequate	1	Inadequate Proposal
Dworshak Dam Related Proposals				
9055	Evaluate Movement Patterns of Bull Trout in Dworshak Reservoir.	Adequate	3	Moderate Support
8709900	Dworshak Dam Impacts Assessment and Fisheries Investigation	Adequate	1	Concur
8740700	Dworshak Impacts/M&E & Biological-Integrated Rule Curves	Inadequate	1	Inadequate Proposal
Clearwater Resident Fish Artificial Production Proposals				
9501300	Nez Perce Trout Ponds	Inadequate	1	Defer
9501600	Genetic Inventory of Westslope Cutthroat Trout, North Fork Clearwater Basin	Inadequate	1	Defer

5) Lower Snake Mainstem

The Lower Snake mainstem subbasin extends from Hells Canyon Dam about 250 miles to the confluence with the Columbia River. The uppermost portion of the subbasin lies within the Hells Canyon National Recreation Area. The section downstream of this is comprised of federal (USFS and BLM) and private lands, while the portion of the subbasin in Washington state includes 17% USFS, 38% rangeland and 40% cropland.

The primary limiting factors for salmonid production in the Lower Snake mainstem subbasin are loss of spawning and rearing habitat related to reservoir development, passage losses of both juveniles and adults at the four mainstem dams and an altered hydrograph (including elevated temperature effects) below Hells Canyon Dam.

Species targeted for management in the subbasin include fall, spring, and summer chinook salmon and summer steelhead. Snake basin coho salmon went extinct in 1986, however, reintroductions have recently been initiated. White sturgeon are a species of special concern. Pacific lamprey have also garnered recent concern.

Management actions in the subbasin include a broad range of artificial production activities, such as supplementation of fall chinook, juvenile acclimation release facilities and development of captive broodstock programs. Many of these are supported through the Lower Snake River Compensation Program administered by the U. S. Fish and Wildlife Service. Passage improvements at the four federal mainstem dams,

such as the prototype surface collector at Lower Granite, are being administered by the U. S. Army Corps of Engineers.

In the Lower Snake subbasin (the Lower Snake River mainstem from Hells Canyon Dam downstream to the confluence with the Columbia River), seven projects were submitted for funding review. These include three projects focusing on status assessment of white sturgeon, fall chinook and steelhead, respectively, one habitat proposal, one artificial production proposal, and one proposal for a consumptive sturgeon fishery. The mix of proposals submitted for review in the Lower Snake subbasin does not generally reflect the primary production constraints in the subbasin, however, this may be due to parallel funding programs through the U. S. Army Corps of Engineers on juvenile and adult passage problems and the Lower Snake River Compensation Program, which provides funding and direction for many of the artificial production facilities in the Lower Snake and Salmon river subbasins. Nevertheless, of the seven proposals submitted, the ISRP judged only two as adequate, the white sturgeon and the summer and fall chinook assessment proposals (Table 22). Proposals judged inadequate were deficient in supplying adequate scientific or technical justification for the work, links to the FWP and adequate details on methods, design, and monitoring.

Table 22. Comparative listing of the ISRP project evaluation, CBFWA priority, and the ISRP conclusions for the projects in the Lower Snake Mainstem Subbasin.

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
LOWER SNAKE SUBREGION				
LOWER SNAKE MAINSTEM				
9090	Recondition Wild Steelhead Kelts For Repeat Spawning	Inadequate	2	Inadequate Proposal
9202408	Protect Critical Salmonid Habitat and Habitat Restoration Investments	Inadequate	1	Inadequate Proposal
9403400	Assessing Summer & Fall Chinook Salmon Restoration in Snake River Basin	Adequate	1	Concur
9801005	Pittsburg Landing, Capt. John Rapids, Big Canyon Fall Chinook Acclim. Fac.	Inadequate	1	Defer
9052	Demonstrate that a Translucent Pipeline Feels Normal to Fish	Inadequate	3	Concur
9056	Evaluate Status of White Sturgeon in the Hells Canyon Reach Snake River, ID	Adequate	2	Concur
9093	Consumptive Sturgeon Fishery-Hells Canyon and Oxbow Reservoirs	Inadequate	2	Inadequate Proposal

j. Upper Snake

The Upper Snake subregion includes the Snake River and its tributaries from the Hells Canyon Dam to the headwaters. The 72,300 square mile subregion includes the Palouse, Weiser, Payette, Malheur, Boise, Owyhee, and Upper Snake Mainstem subbasins. Native resident fish targeted for active management include bull trout, redband trout, cutthroat trout, and white sturgeon. The primary goal of management actions is "to protect, enhance, and restore, where needed, these fish in their historic habitat." A secondary goal is "to provide fisheries and harvest opportunities of native fisheries and also of introduced game fish where native fisheries have been irrevocable altered." The wildlife mitigation goal is to fully mitigate for losses due to construction and operation of the hydroelectric projects in the subregion, which total 66,841 habitat units, slightly more than half of which are associated with the Palisades hydroproject. Riparian/riverine and wetlands habitat are given the highest wildlife mitigation priorities in the subregion. Management of habitat and harvest, as well as artificial production (supplementation) have been used to maintain fish production. Maintaining and enhancing native populations is said to have highest priority, but game fish such as bass, crappie, catfish, and hatchery trout have been introduced to support fisheries.

Upper Snake Mainstem Subbasin. This subbasin is located above Hells Canyon Dam in Idaho. It covers a large area, from southeastern Oregon to western Wyoming and includes small portions of northern Nevada and Utah. The Boise and Payette Rivers form major subbasins within the Upper Snake subbasin, draining about 4,130 and 3,270 square miles respectively. Many dams have affected this subbasin, and the natural seasonal hydrograph has been replaced by controlled flow regimes. The physical and chemical nature of the mainstem Snake is greatly altered by dam construction, damaging populations of Yellowstone cutthroat trout, whitefish and bull trout. Genetic introgression with nonnative fishes also has damaged native fish populations. Management objectives include adjustment of flows to benefit fish and wildlife, including restoring spawning areas and passage, restoration of steam and riparian habitat, and reintroduction of native species to restored habitat.

Malheur Subbasin. The Malheur River in eastern Oregon flows into the Upper Snake. Hydroprojects have eliminated anadromous fish and damaged native resident fish. The primary subbasin goal is protection, enhancement, and restoration of native resident fish in historic habitat, but provision of fisheries has been given a secondary priority and includes use of introduced game fish. The primary fish species targeted for management are bull and redband trout. Currently, only one BPA-sponsored project is ongoing in the Subbasin (The Stinkingwater salmonid project).

Owyhee Subbasin. Protection and enhancement of streams and rivers and of native resident fish are the management goals in this Subbasin, which includes many free-flowing and near pristine streams. The primary fish targeted for management are bull and redband trout. The first management strategy described for the subbasin is optimization of consumptive and non-consumptive use of hatchery-reared game fish. Hatchery-reared game fish have been used to increase harvest and trophy fisheries; these are managed with an objective of not damaging native fish populations, however the criteria listed for measuring success of this strategy do not include measures of impact on native fishes. A second management strategy emphasizes habitat protection and restoration as important strategies for maintaining native fish populations.

Twenty proposals were submitted for the Upper Snake subregion. Eight of these were from the Upper Snake mainstem, 7 from the Owyhee, 4from the Malheur, and 1 from the Boise subbasin. The proposals included 13 to the resident fish caucus, of which 4 were for hatchery programs, 1 to the anadromous fish caucus, and 6 to the wildlife caucus. CBFWA assigned 13 proposals to Tier 1, 1 to Tier 2, and 6 to Tier 3. ISRP rated roughly half the proposals as adequate (11/20) and half as inadequate (9/20). CBFWA recommended funding for 10 of the 13 resident fish proposals, including the 4 hatchery proposals. ISRP concurs with this recommendation for 6 of the proposals, but finds the two Tier 3 proposals adequate and offers them moderate support. Additionally, the ISRP found the Tier 2 resident fish proposal inadequate (Table 23). The ISRP deferred recommendation on hatchery and hatchery-related proposals until the comprehensive hatchery review is completed. Additionally, many of the hatchery proposals from the Upper Snake Subregion involve introduction of non-native stocks, and the interactions of these with native resident fishes also should be reviewed. In addition to these potential biological conflicts of the hatchery proposals, we note that none of the hatchery proposals from this subregion were rated as adequate, reflecting lack of adequate technical detail as well as lack of adequate justification for the work.

Table 23. Comparative listing of the ISRP project evaluation, CBFWA priority, and the ISRP conclusions for the projects in the Upper Snake Subregion.

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
UPPER SNAKE SUBREGION				
UPPER SNAKE MAINSTEM SUBBASIN				
9106700	Idaho Water Rental: Resident Fish and Wildlife Impacts Phase III	Adequate	1	Concur
9201000	Habitat Restoration/Enhancement Fort Hall Reservation	Inadequate	1	Defer
9500600	Shoshone-Bannock/Shoshone-Paiute Joint Culture Facility	Inadequate	1	Defer
9202406	Public Fisheries Education/Enhanced Protection of Resident/ESA Species	Adequate	3	Moderate Support
9700900	Evaluate Means of Rebuilding White Sturgeon Populations in Lower Snake R	Adequate	1	Concur
9800200	Snake River Native Salmonid Assessment	Adequate	1	Concur
9042	Critical Ecosystem Reclamation, Recovery and Recharge Project	Inadequate	3	Concur
9505700	Southern Idaho Wildlife Mitigation	Adequate	1	Concur
MALHEUR SUBBASIN				
9107	North Fork Malheur River Bull Trout and Redband Trout Life History Study	Adequate	1	Concur
9701900	Stinkingwater Salmonid Project	Adequate	1	Concur
9106	Acquisition of Malheur Wildlife Mitigation Site	Adequate	1	Concur
9130	Burns Paiute Mitigation Coordinator	Adequate	1	Concur
OWYHEE SUBBASIN				
9022	Reintroduction of Salmon & Steelhead - Mary's Cr. & Owyhee R.	Inadequate	3	Concur
9020	Genetic Analysis of Native Fish on the Duck Valley Indian Reservation	Inadequate	2	Inadequate Proposal
8815600	Stocking Fish in Lakes and Streams on the Duck Valley Indian Reservation	Inadequate	1	Defer
9501500	Billy Shaw Wetlands catch and release fishery O&M	Inadequate	1	Defer
9701100	Enhance and Protect Habitat and Riparian Areas on Duck Valley Reservation	Adequate	1	Concur
9021	Mitigate Wildlife Losses on the Duck Valley Indian Reservation	Inadequate	3	Concur
9023	Enforcement of ESA Laws on the Duck Valley Indian Reservation	Inadequate	3	Concur

ID	Title	ISRP Evaluation	CBFWA Tier	ISRP Conclusion
BOISE SUBBASIN				
9053	Kirby (Atlanta) Dam Fish Ladder	Adequate	3	Moderate Support

C. Programmatic Recommendations

The resources, time, and money, for Columbia Basin salmon restoration are large but limited, so priorities need to be established: not all proposed new or continuing projects can be funded, not all approaches can be tested simultaneously. Of the projects that are ranked high-priority, those selected for funding must constitute a coherent whole. Do they? To determine if they do, we asked these questions: Does the package of projects submitted in 1998, represent a sensible and integrated strategy at the watershed, subregion and subbasin levels? Are efforts undertaken on a sufficient scale to be effective? Do the pieces fit together in a reasonably complete and coherent way?

Our review of the individual project proposals this year addressed primarily the quality of the proposals, rather than quality of the project—the need for the project and its priority within the entire FWP. Quality of the proposal, in this narrow sense, depended on the adequacy of the description of the proposed work. This stops somewhat short of asking whether the work is worth doing, and it stops far short of asking about its relative importance to the restoration of a healthy ecosystem and salmon recovery. In our programmatic analysis, we shift from looking at the program from the bottom up (i.e., examining individual proposals), to looking at it from the top down. We ask what apparent priorities are revealed in the recent funding allocations, and then we evaluate those priorities versus other possible priorities.

In this year's review, the top-down and bottom-up analyses do not meet. We do not fully evaluate the broader questions raised above and we do not systematically revisit our scoring of the individual project proposals in light of the programmatic priorities. We did identify several "big picture" issues that are described in this section, but those issues are but a sample of all the possible concerns. Time constraints prevented the level of programmatic analysis we believe is necessary. Ways to reduce those constraints are discussed in Section V-D.2 and V-D.3. In the future, it is the ISRP's intent to focus more attention on programmatic priorities and how well the individual projects address them.

In addition to the programmatic issues described later in this section, we identified seven questions related to the FWP and its implementation. Those questions should be used to query the suite of individual proposals that make up the "program."

1. Do the projects fit together into a coordinated and coherent program?

2. Has the program worked as currently implemented?

3. Is there reason to think it will work?

4. Is deployment on the correct scale?

5. Are the right measures of performance being monitored?

6. Is the right spectrum of interventions being tested?

7. Are the right questions being asked?

The ISRP believes the answers to these questions are critical to the successful implementation of the FWP. We cannot address them in this report, but we will address them in upcoming reports.

Other programmatic issues include the following:

1. Reporting Accomplishments

Implementation of the FWP began in the early 1980s. Some of the projects proposed for FY 99 have been funded through the FWP for a decade or more. After 16 years of efforts to restore salmon through the FWP, it's time to start reporting accomplishments and let success or lack of it guide the future development of the program. The ISRP noted a failure to report accomplishments at all levels in the program—watershed, subregion, and many individual projects. This was particularly apparent and disturbing in proposals that had received long-term funding (>10 years in many cases), but provided no description or assessment of the project's accomplishments.

The FY 99 Draft Annual Implementation Work Plan (Vols. I, II and III) is a major improvement over last year's document. CBFWA should be commended for its effort. The document describes in detail which projects should be funded and how the dollars should be distributed across the basin. However, there are two troubling omissions: 1) there is little or no mention of accomplishments or progress towards meeting the objectives of

the FWP; and 2) there is no mention of how the vast amount of information acquired each year through the FWP is used to improve the program. CBFWA's Annual Implementation Work Plan should report progress towards the FWP's goals and describe how information collected in previous years is being used to improve program implementation. This reporting should cover the program at the watershed and subbasin levels.

The lack of reporting on accomplishments extends to the project level. Most proposals for continuing work did not sufficiently describe the project's results to date. This deficiency made it difficult for the ISRP to evaluate the productivity of the individual projects. Results, when given, were often in administrative terms rather than as technical descriptions or in terms of the FWP's goals. For example, the results of some habitat projects were reported as the number of structures placed in a stream. The goal of the FWP is not to maximize the number of structures placed in a tributary. The goal is to restore ecosystem health and return fish and wildlife to a part of their historical abundance; results should be presented in those terms. Had we adhered strictly to our criterion of a demonstration of adequate results, most continuing proposals would have been judged inadequate.

V-C.1.1

The ISRP recommends that the Council urge CBFWA to include in its Annual Implementation Work Plan a report of past accomplishments at the watershed and subregional/ subbasin levels. The accomplishments should be reported in terms of FWP goals.

V-C.1.2

The ISRP recommends that the Council urge CBFWA to include in its Annual Implementation Work Plan a report that demonstrates it is using the information collected to improve program implementation (adaptive management) at the watershed and subregion/subbasin level. This report should include a description of the specific improvements in the program that resulted from information obtained through the program in previous years.

V-C.1.3

The ISRP recommends that the Council or Council staff communicate to project managers that continuation proposals will not be funded unless there is a technical summarization of past year's results sufficient for peer review.

Implementation of these recommendations will require action on FWP Measures 2.1A, 3.1D:1 and measures in Sections 3 and 4 of the FWP dealing with monitoring and evaluation.

2. Artificial Production

In our 1997 report, we noted the large percentage of the budget committed to artificial propagation, and the nearly complete failure to implement those measures that give direction to and ensure the effectiveness of hatcheries. These observations prompted several recommendations with important implications to the artificial propagation program. Of special importance, we recommended the Council implement a comprehensive review of artificial propagation in the basin (Recommendation III.B.10). That review is now underway. The technical portion of the review will be completed in the winter of 1998 and the policy portion will be completed in the in the summer of 1999. Because we believe this review is linked to the peer review process—it is in effect a peer review at the programmatic level—and it is a critical step in the process of ensuring a balanced implementation of the FWP, we deferred our recommendation on individual hatchery proposals until after the technical review portion of the comprehensive review has been completed. We did evaluate and discuss each hatchery proposal; however, these need to be placed in the context of the comprehensive review. Thus, they were given deferred status. Nevertheless, we note that many of the hatchery proposals were technically inadequate and many appeared to have biologically undesirable side-effects that counterbalanced benefits they might produce. The generally poor quality of the hatchery proposals reinforce the concerns the ISRP expressed in its 1997 report regarding the hatchery program and emphasizes the importance of the comprehensive review.

While evaluation of individual hatchery programs has been deferred, there are some general observations regarding the hatchery proposals that can be made here.

1. In general the hatchery programs were composed of individual project proposals that were of poor quality. Within that blanket statement it should be recognized that some programs like the Hood River were of higher quality than others. Likewise, individual project proposals included under the umbrella of a single hatchery program varied widely in quality.

2. The supplementation programs tend to be large and broken into several separate proposals. Fragmenting programs into several proposals made evaluation difficult. In the future the large supplementation programs should be presented as a single program in a single document. Hopefully, supplementation programs can be targeted for early inclusion in the multiyear approval process described in Section V-D.4 of this report.

V-C.2.1
The ISRP recommends that the individual project proposals that comprise parts of a single large supplementation project be incorporated under a single umbrella proposal and considered for a multi-year funding track. This recommendation assumes that the comprehensive review will recommend continuation of supplementation programs in the basin.

3. Habitat Restoration

The ISRP continued to be disappointed by the number of habitat restoration proposals that did not give sufficient evidence of being preceded by a watershed assessment as we recommended in last year's report (ISRP 97-2). Washington State and the two large federal land management agencies (USFS, BLM) both employ formal watershed assessment protocols. We took a broad view of watershed analysis and did not require explicit reference to the use of formal protocols. We merely looked for some indication that the habitat restoration proposals had considered their proposed activities in the context of the drainage system as a whole and had used existing watershed information to develop a

technical justification for their efforts. Unfortunately, many projects were deficient in this regard.

Specifically, many proposals did not contain information on:

1. The distribution of the species of interest within the watershed, in relation to the location of the proposed restoration activity. That is, was the project sited correctly relative to the behavior and distribution of the organism(s) of interest?

2. How the proposal related to other restoration efforts within the watershed. Were restoration activities complementary or would there be potential conflicts?

3. Whether the proposal would promote the restoration of normative ecological processes within the watershed.

4. Whether the proposal had considered the alternatives of passive restoration (e.g., letting the stream or riparian zone restore itself through successional habitat recovery) vs. active restoration (assisting the recovery process through intervention activities such as riparian plantings or instream structure placement).

5. Whether any steps were being taken within the watershed to correct the source(s) of problem(s).

6. What evidence suggested that the proposed activity would actually correct a significant limiting factor to natural production.

Without this information, the ISRP was unable to judge whether the projects were worthwhile, or whether they would result in expensive, high-maintenance projects whose effectiveness was limited. We strongly encourage all future habitat restoration proposals to include statements that address the six items listed above.

V-C.3.1

The ISRP recommends that the Council set a deadline of 2 to 3 years after which no habitat projects will be funded unless they are preceded by and consistent with a watershed assessment, and the relationship of the project to that assessment clearly stated. Prior to that deadline, the Council should fund only those proposed projects that address the questions and concerns listed in Section V-C.3 Habitat Restoration.

4. Innovative Work

In reviewing the CBFWA prioritization of proposals in the context of our independent proposal review, the ISRP concluded that particularly innovative proposals were not rated highly. Most Tier 1 proposals were of the type: "We know what to do, now let's do it!" or "This is what we have been doing, so let's do more!" Proposals that reflected ideas not yet part of the conventional wisdom in Northwest fisheries practice were usually relegated to Tier 3. If there was evidence that the current program is working, the ISRP might have less concern in this area. However, the failure to arrest the declines in salmon abundance and bring about recovery suggests some emphasis should be placed on innovative ideas. Those ideas often come from outside the inner circles of salmon management institutions. The ISRP is concerned that innovative ideas of the type that might have large payoffs in the future are not being given adequate attention. Further, consistent lack of success in getting new ideas funded sends a message to potential proposers that new ideas are not wanted. Table 24 lists selected proposals in CBFWA's Tier 3, to illustrate what the ISRP considered were innovative ideas and technically adequate for funding.

Table 24. Selected proposals in CBFWA's Tier 3, that ISRP found innovative and technically acceptable.

Number	Title
9047	Use of Unsteady Flow to Aid Mainstem Passage of Juvenile Salmonids
9077	Evaluation of Interactions between American Shad and Salmon in Columbia River
9078	Water Temperature Effects on Fall Chinook Salmon in the Snake & Columbia Rivers

Number	Title
9108	Evaluate Strobe Lights as a Juvenile Salmonid Guidance Behavioral Tool
9112	Numerical Evaluation of Flow Modification on Salmonid Migration
9113	Evaluate Effects of Hydraulic Turbulence on Survival of Migratory Fishes
9136	Influence of Marine-Derived Nutrient Influx on CRB Salmonid Production
9016	Research and Evaluation Restoration of NE Oregon Streams and Develop Management Guidelines.
9141	Strategies for Riparian Recovery: Plant Succession and Salmon
9153	Preserve Cryogenically the Gametes of selected Mid-Columbia Salmonid Stocks

In the experience of the members of the ISRP, and in the history of the FWP itself, there are many examples of successful innovative projects that needed special attention to get started. These projects had novel ideas, were initially spurned by the scientific/management establishment, struggled to demonstrate the proof of principle, and then evolved into some of the most important mainstays of current practice. Within the FWP, one need only name the adaptation of transponder identification tags to salmonid marking (PIT tags; developed originally for uses such as marking racehorses and commodity shipments). Many funding organizations and research laboratories maintain specific categories of funds for exploratory, high-risk, potential high-payoff activities as investments in the future.

V-C.4.1

The ISRP recommends that the Council explicitly encourage innovative projects by earmarking a small percentage of its budget each year as seed money.

Both CBFWA and the ISRP could be requested to flag particularly novel and innovative ideas for exploratory funding. The projects might be held to relatively small amounts (e.g., $100,000 or less per year per project) and an initial year of funding to demonstrate value to the FWP. All organizations would be eligible and participation by those outside the traditional circle of salmon management agencies would be encouraged. Most likely, successful new concepts would surface and subsequently be incorporated into the work of the management agencies.

It is often heard from critics of the FWP that most of the BPA funding for the FWP goes to fish and wildlife agencies in the region and that non-agency proposers are at a disadvantage. We observed that CBFWA is sensitive to this assertion. Page 60 of CBFWA's Draft FY 99 AIWP, includes a figure that shows funding solicitation and recommendation by CBFWA membership status. Roughly, it shows proposals from non-CBFWA members amounted to 30% of the total funding solicited ($58 mil/196 mil). In comparison, it shows CBFWA recommended that non-CBFWA proposals receive 20% of the funding ($25 mil/123 mil). Considering the broader solicitation of proposals this year and the inevitable variation in quality among individual proposals, the ISRP does not believe that any great inequity exists. However, the matter of fostering innovative proposals (discussed above) is a different issue.

5. Wildlife Programs

Measures in the FWP are intended to fully mitigate for the wildlife losses that have occurred as a result of construction and operation of the federal and non-federal hydroelectric facilities. The wildlife program has concentrated on protection and enhancement of habitat to compensate for effects on wildlife associated with hydropower development; both negative and positive effects are recognized. Potential projects are evaluated primarily on the basis of the number of habitat units gained by purchase or protection of wildlife habitat, given compliance with policies and priorities that are listed in the FWP. This methodology is reasonable and appropriate for quantification of the value of potential projects, but is not without weaknesses and limitations.

Current monitoring and evaluation of projects primarily involves following of habitat units to assure that the anticipated habitat mitigation has occurred. Proposals submitted in 1998, in general, contained better plans for further monitoring and evaluation than those submitted in 1997, however, direct monitoring of wildlife populations is not yet a regular part of the program. Thus, attainment of the ultimate goal of sustaining wildlife remains largely unknown. Scientific technical merit of the procedures used now can be evaluated, but this does not itself constitute adequate review of the scientific soundness of the proposal.

Recommendations for the 1998 report which were also included in the 1997 report but not completely implemented are repeated below.

V-C.5.1

The ISRP recommends that the wildlife program include an explicit scientific research component. Innovative monitoring and research proposals could be encouraged through this part of the program.

V-C.5.2

The ISRP recommends that additional scientific criteria be added to those currently used to prioritize proposals for wildlife mitigation projects.

V-C.5.3

The ISRP recommends that specific mechanisms be developed to coordinate the FWP with other programs that have significant impact on fish and wildlife and their habitat in the Columbia River Basin.

Given the subbasin approach used by the ISRP for review of FY 99 proposals, it is difficult to give an overall review of the wildlife part of the FWP. In general, our concerns were that many projects tended to deal with protection and enhancement of steppe-shrub upland habitat without relating the potential benefits to fish and wetland species in a more integrated ecosystem approach. On the other hand, few of the fish projects, if any, related potential benefits to terrestrial wildlife. The ISRP believes that better integration of projects for protection of habitat for spawning and rearing habitat for fish with protection of terrestrial habitat will provide long-term benefits. For example, many fisheries projects called for fencing of streambanks to limit access by cattle, while most wildlife projects call for purchase of land or conservation easements. Both of these practices are desirable, but it may be more economical, and more ecologically effective, for the two programs to work in harmony with each other.

V-C.5.4

The ISRP recommends that the wildlife and fish habitat protection programs be better integrated and that projects be evaluated on criteria that favor those projects with documented benefits to both terrestrial and aquatic species.

6. Targeted RFP

The majority of the proposals reviewed were for continuing projects that have been in existence for a number of years. The ISRP recognizes the need for long-term commitment for some projects, especially those that involve operation and maintenance support for core functions such as Pit-Tag detection, data storage, and data retrieval for the smolt monitoring projects. Other projects require commitments for relatively long periods of time, (5 to 10 years) with periodic in-depth programmatic review. Regardless of the purpose of the measures in the published FWP, the ISRP feels that the past procedures for funding projects may have encouraged “business as usual” without granting adequate opportunity for the Council to direct work or research into needed areas. We recognize and commend

the Council for recently requesting proposals for work in several areas including the effects of the ocean and estuary on survival of salmon and steelhead, impacts of the hydrosystem on mainstem habitats, and empirical assessment of population structure in chinook salmon.

V-C.6.1
The ISRP recommends that the Council continue the practice of developing RFPs targeted to specific problems. This should become an annual procedure. We further recommend that requests for proposals to conduct the work or research be widely distributed to individuals, companies, and government agencies.

7. Budget Observations

During the course of the review of the 1998 proposals, the ISRP identified several potential problems in the project budgets. For example:

1. Project proposals from different organizations showed significant discrepancies in the costs of tasks that appeared to be similar.

2. Total commitment to more than one FTE for a single individual listed in several different projects.

3. Apparent differences in the way indirect costs are calculated. Some projects applied indirect charges to large purchases, while others did not.

A review of the budgeting procedures is beyond the scope of our assignment and outside the expertise of the ISRP. The potential problems we identified could all have reasonable explanations. However, the frequency of these potential problems was sufficient for us to call them to the Council's attention.

V-C.7.1

The ISRP recommends that Council systematically evaluate budgets among projects for consistency and reasonableness.

8. FTE

Some FY 99 proposals were exclusively for staff support, either without identification of a specific project or to cover several projects. For example, Project No. 8812088 requested $1 million for FTEs to work on several different projects. The ISRP finds this practice to be inappropriate for technical evaluation of the proposed work and for creating a record of objectives and accomplishments.

V-C.8.1

The ISRP recommends that the Council require requests for staff funding be tied to a specific project proposal(s). The FTEs should be justified, their work described and the costs, and results tied to the objectives of a functional project.

9. Funding in Lieu Projects

The panel reviewed several proposals that were not clearly related to the effects of hydropower development in the basin and seemed to fall into areas of responsibility of other agencies. Generally, these proposals were for tributary habitat enhancement projects. For example, funds were requested for replacing flood irrigation with sprinkler systems on selected farms and for creating sediment settling basins for irrigated agriculture return flows. Both types of proposals seem more related to normal Department of Agriculture or Bureau of Reclamation responsibilities than to the Council's FWP. Other proposals included road improvement projects and even toilets at Forest Service recreational areas, and a storage dam for irrigation water. Although technically these projects could have identifiable (and perhaps important) effects for improving regional salmon habitat, the ISRP found it difficult to reconcile the use of BPA funds to carry out the responsibilities of the other agencies. The use of BPA funds for such projects is a policy question and outside the ISRP's mandate, but we feel it

is appropriate to call this issue to the Council's attention, for our future guidance as well as those who prepare project proposals.

D. COMMENTS ON THE REVIEW PROCESS

1. Review Schedule

The ISRP concludes from its 1998 proposal review that the time allocated for an evaluation of over 400 proposals is too short. This view is shared by CBFWA, which conducted a parallel review. Reviewers were obliged to spend a disproportionately large percentage of their time for nearly 5 months on individual project reviews and report preparation. In addition, other scientific advisory functions that the ISRP could have been performing, such as identification and description of broader scale programmatic issues, identification of emerging scientific issues, and strategic planning, did not receive adequate attention. Clearly, either the time allowed for reviews must increase or there must be a change in the approach to reviews.

The preferred solution is to change the approach to the reviews. The calendar offers little flexibility if we are to preserve an annual cycle of proposal solicitation, preparation, management, and review. The main opportunity for improvement is the replacement of a zero-base review process for the whole FWP (every project proposed and reviewed annually) with multi-year proposals and reviews for selected projects (see V-D.2 for details). Under such a system, most projects that are intended to continue for several years would be reviewed in detail on a 3-5-year cycle rather than annually. The annual review process would thus concentrate on new proposals (for which an available amount of funding would be identified annually) and a subset of the continuing proposals then due for full review. The in-depth reviews of programs on the 3-5-year funding track could be carried out by the ISRP throughout the year.

The ISRP will work with CBFWA and the Council in the next several months to rectify the problems with the review schedule. We will develop a plan for a review process that accommodates time and personnel constraints, but also preserves the valuable benefits of peer review and offers scope for the ISRP to provide other scientific advisory functions for the Council. We are already sharing thoughts with CBFWA and Council staff about how to implement a multi-year review and funding process. This planning should be completed by September so that the annual solicitation and review cycle can begin smoothly in late fall 1998.

2. Multi-year Project Approval

The majority of the 403 project proposals that the ISRP reviewed were for continuation of work begun earlier. Preparation and review of these proposals in 1998 was often unsatisfying and unsatisfactory. Long-term projects do not need to be reviewed each year and to do so just keeps the annual work load at unacceptable levels. For many projects, evaluations that recur at intervals of 3-5 years should be adequate.

V-D.2.1
The ISRP recommends that the Council adopt a multi-year funding process for selected projects.

If a multi-year funding cycle were adopted for selected projects, the number of proposals to be written and reviewed each year would be reduced. The details of the process need to be worked out among CBFWA agencies, BPA, and the Council (we understand that CBFWA has drafted a discussion paper). The ISRP has some suggestions (which assume a continuation of the basic process initiated by the 1996 Amendment to the Northwest Power Act):

1. Establish 3-5 years as acceptable intervals between funding decisions for some projects. The actual number of years could differ between projects within this range. Some projects might be completed after only 3-5 years. Others, that must continue for longer periods, would be reevaluated at these intervals.

2. The managers and Council would select the projects eligible for multi-year funding. Criteria would need to be developed to make selection equitable. For ease of both preparation of proposals and review by CBFWA and the ISRP, it seems useful to develop a mix of staggered multi-year proposals, annually reviewed proposals, and new proposals (likely reviewed annually, at least initially).

3. The 3-5 year funding period would be preceded by a detailed proposal (similar to the current ones, but more thorough) with attached programmatic planning documents, research reports, etc., and receive thorough peer review.

4. To ensure a staggered preparation and review process, multi-year project proposals might be accepted at any time in a year (before the regular due date), with the results of the review (priority, adequacy, inadequacy) given at the same time as other reviews by

CBFWA and the ISRP. The ISRP expects that much better proposals could be developed and their review be more thorough and thoughtful if both are handled outside the annual proposal cycle. This would allow more time and individual attention for the review. Alternatively, the Council could designate a different due date for multi-year proposals (e.g., July).

5. For large projects or multi-proposal programs, the peer review might be accomplished by the ISAB and focus on the programmatic documents, as the ISG did for the Smolt Monitoring Program.

6. Despite 3-5-year funding decisions, abbreviated annual submissions (i.e., progress reports) to BPA could be required that would, for example, summarize progress to date, make modified budget requests, and list staff changes. In principle, a badly performing project could be reconsidered and terminated, although this would be rare. These documents would not receive CBFWA or ISRP review unless flagged by BPA or the Council for an evaluation of technical progress.

7. In the last year of the funding period, a new detailed proposal would need to be submitted for another thorough review by both CBFWA and the ISRP, followed by a funding decision by the Council and BPA.

The ISRP is willing to work with the Council and CBFWA to develop a mutually acceptable system for multi-year proposals in the FWP. We urge that this development take place before the next proposal cycle so that appropriate changes can be made in the solicitation process.

3. Different Criteria for Different Project Types

It was clear to the ISRP that different criteria were needed to evaluate the merits of different types of projects. For example, it was difficult to judge the technical merits of a research proposal for mainstem fish passage and another proposal for operation and maintenance of irrigation screens using the same questions and criteria. In future reviews, we recommend proposal forms be tailored to different project categories and that each major category have its own set of evaluation criteria. Some categories and general criteria are:

a. Watershed Councils

This category includes proposals for model watersheds, watershed planning and coordination activities, and multi-agency watershed assessments. The primary activities of watershed councils often involve identifying habitat limiting factors, locating and prioritizing restoration opportunities, involving stakeholders in restoration decisions, and coordinating implementation and monitoring efforts. While these are important functions, they usually include little research or management and are not easily evaluated using criteria developed for those purposes. However, systematic assessments of performance are as important to watershed councils as they are to any other funded activity; perhaps more important, because watershed councils are an experimental institutional structure. Because the structure and processes adopted by watershed councils are fundamental to their performance, evaluation of these factors is an important part of proposal review. An appropriate set of criteria should include the following questions:

1. Does the project consider the watershed as a whole, regardless of land ownership?

2. Have the project proposers taken existing information into account?

3. Are watershed assessment/analysis methods consistent and appropriate to the landscape setting? Have restoration decisions been preceded by a watershed assessment?

4. Have the project proposers provided reasonable evidence that restoration activities will improve factors limiting natural production? Are improvements being proposed for the right location, given the distribution of species of interest?

5. Have the full range of watershed uses been documented?

6. Has the set of regulatory authorities affecting the watershed been identified?

7. Is there a balance of local, state, and federal participants in the project? Are the full range of watershed interests (stakeholders) represented on the Council?

8. Do proposed activities contain measurable objectives?

9. Have criteria for success been specified?

10. Are monitoring efforts adequately described, including who will do them? Do monitoring efforts contain checkpoints for measuring progress toward meeting objectives? If past activities have failed, have the reasons for failure been identified?

11. Are monitoring methods fully identified? Are they cost-effective?

12. Are watershed council activities coordinated with activities of other watershed councils?

13. Does the watershed council communicate with other watershed councils? What information sharing plans are in place?

b. Information Dissemination

This category includes projects whose primary function is to transfer information to the public. It may also include support for Internet sites where data and information are readily available (e.g., StreamNet, PITAGIS). Criteria for evaluation should include questions about the project, the target audience and its information needs, the importance of the message, and methods for evaluating the impact of information.

1. Does the proposal describe sufficiently what is being communicated to the public? If the purpose is to make data available, are the data reasonably current and in a form that can be easily viewed and downloaded?

2. What is the mechanism for assuring quality control over the information/data being given to the public?

3. What has been done to assess the public demand for information? Has an assessment of information needs been conducted?

4. Approximately how many people will receive the information (e.g., number of hits on a web site)

5. What changes in behavior or outcomes are anticipated to result from the information?

6. What methods will be used to assess the impact of the information?

7. Is there an explicit connection between the education project and the goals and objectives of the FWP?

c. Operation and Maintenance

Some proposals request funding for the operation and maintenance of existing capital structures, such as fish screens or riparian fences. The ISRP does not believe that separate proposals for operation and maintenance should be submitted when the project involves other types of activities (e.g., research). In this case a comprehensive proposal should be submitted. For those projects where operation and maintenance is the sole purpose, the following criteria should be considered. We wish to stress, however, that effectiveness monitoring is an essential component of any operation and maintenance project.

1. Is the history of the project adequately described, including the original need for the project?

2. Is the budget justified and reasonable?

3. How well has the project performed in achieving its objective? Has there been adequate monitoring of project effectiveness?

4. Is the need for the work justified?

d. New Construction

For projects that request funding for new capital construction, the evaluation criteria should include a synopsis of the need for the project in the context of the FWP, a description of who will do the work and their qualifications/experience, and a construction schedule. Of these criteria, a clear statement of the programmatic need for the project is most important and it should include a statement of why the proposed approach is the most cost effective.

1. Is there a clear description of the need for the project, including the expected benefits relative to the costs of construction and long-term maintenance?

2. What are the qualifications of the builders, and what contingencies have been included to prevent excessive cost overruns?

3. Is the construction schedule reasonable and does it include provisions for delays?

e. Research and Monitoring

The evaluation form used by the ISRP to assess the merits of the FY 99 proposals is well suited to research and monitoring. Although it can be modified (and perhaps simplified) in coming years, especially for 3-5 year project reviews, the basic criteria pertaining to research in the evaluation form are currently adequate.

f. Implementation and Management

This is a broad category of projects which includes "on the ground" activities ranging from habitat restoration to hatchery operations to mainstem passage improvements. Research is not a principal goal of these projects, although they should all have a monitoring component. Many of the BPA proposals will fit into this category. Although the proposals may differ considerably in subject matter, the criteria for evaluation should have the following elements in common:

1. Is there a clear need for the work based on demonstrable evidence that the project will improve fish and wildlife populations?

2. Is the project explicitly linked to one or more elements of the FWP? Does the project clearly address the ultimate goals of the FWP?

3. Do other alternative approaches exist and how have these been evaluated in deciding on a course of action?

4. Does the project employ the best available scientific information and techniques?

5. Why should BPA, and not another organization, fund the project?

6. Is the monitoring plan sufficiently described, appropriate to the project, and adequately staffed and funded?

7. If this is an ongoing project, what is the evidence of project success?

8. Have unwanted side-effects of proposed activities been considered and accounted for? Does the project generate effects that conflict with other goals of the FWP?

g. Wildlife Habitat Acquisitions

The wildlife mitigation program calls for acquisition of habitat to mitigate for habitat lost during dam construction and reservoir operations. Project proposals often call for acquisitions of land offsite that possesses conditions similar to that lost to the hydrosystem, for example, a ranch with habitat supporting wildlife species which would have occurred adjacent to the mainstem Columbia River. In most cases, land thus acquired is managed for ecological processes and as a natural reserve for plants and animals (although some wildlife mitigation areas permit hunting and fishing). The approach to wildlife mitigation under the FWP differs fundamentally from fisheries enhancement goals, in which the emphasis has been to substitute hatchery for wild fish and to improve survival of fish in rivers that are highly altered by dams, water withdrawals, land use practices, etc. Criteria for evaluating wildlife mitigation projects should include:

1. Has the property being considered for acquisition been surveyed to determine what habitat types exist?

2. Has the need for acquiring the property in question been justified, e.g., through gap analysis? Has there been a clearly demonstrated need for acquiring more of this type of habitat, as opposed to other types?

3. What wildlife species will benefit from the acquisition? Will there be benefits to fishery resources as well?

4. Does the proposal clearly explain the acquisition process and whether the property will be dedicated to a wildlife reserve in perpetuity?

5. Is the cost reasonable?

6. Is the monitoring program adequate?

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